APPENDICES

(Electronic Submittals)

Appendix A

Surface Vapor Flux Data Sheets

(Electronic)

CONTROL SOIL
DAY 1

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/17/06 SAMPLERS CES

LOCATION BOEING SSFL CONTROL AREA - RD-05A

SURFACE DESCRIPTION DRY SOIL ↑ SOUTH

CURRENT ACTIVITY

INSTRUMENT TYPE _____ I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE

PROJECT QC: BACKGROUND MEASUREMENTS ☐ BLANK MEASUREMENTS ☐ REPLICATE MEASUREMENTS ☐
AMBIENT CONCENTRATIONS

CHAMBER I.D. F PHOTO TAKEN: Yes ☐ No ☒ NO CAMERAS ALLOWED

CHAMBER SEAL YES CONDENSATION: Yes ☐ No ☐ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', 0-3 mph Wind at Seal, _____ mph

TEMP 80° RAIN: Yes ☐ No ☐ Comment

PRIOR CHAMBER CLEANING: Full Wash ☒ Wet Wipe ☐ Dry Wipe ☐ None ☐

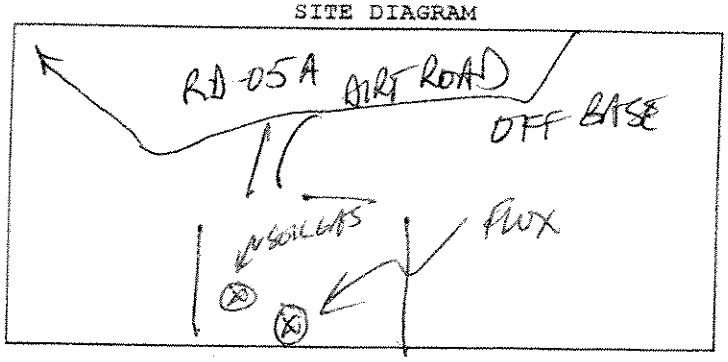
SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☒ New ☒ Used ☐

SWEEP AIR _____ CC CA01783 SUPPLIER SM PSIG START 1600 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F) Chamber Surf	Chamber Air	Ambient Surf	Ambient Air	Real-Time (ppmv) NA		Sample Number	Comments
0941	5.0	0								-29.4
0947	↓	1								CAN# 789
0953		2								
0959		3								
1005		4								
1011	←	5	97°	87°	92°	86°			BZVF01501	MU575
1023										
1029										

COMMENTS: ABOUT 5' EAST OF AREA SOIL GAS PROBE LOCATION

SITE DIAGRAM



1N

CES/STOCKDISK

BLANK #
DAY 1

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/17/06 SAMPLERS CES

LOCATION BOEING SSFL - SYSTEM BLANK

SURFACE DESCRIPTION TEFLON ; TAKEN @ CONTROL SOUTH LOCATION - RD-05A

CURRENT ACTIVITY N/A

INSTRUMENT TYPE N/A I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE N/A

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☒
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. _____ PHOTO TAKEN: Yes ☐ No ☒ _____

CHAMBER SEAL LOCAR-IN VAN CONDENSATION: Yes ☐ No ☒ BARM PRESS LEVELED, MWH

AMBIENT CONDITIONS: Sun ☐ P.Sun ☐ Cloudy ☐ Wind at 5', N/A mph Wind at Seal, ____ mph

TEMP 86° RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☒ Wet Wipe ☐ Dry Wipe ☐ None ☐ _____

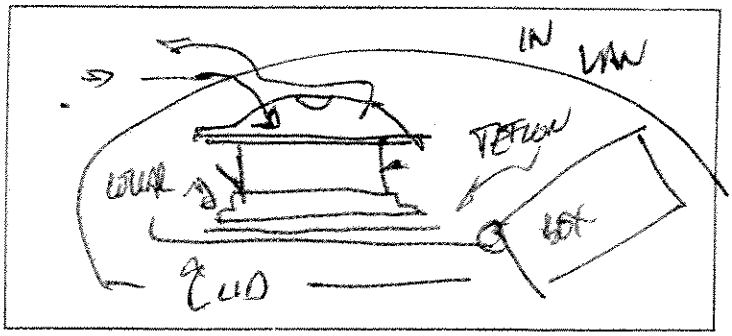
SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☒ New ☒ Used ☐

SWEEP AIR CC426 CC UHP SUPPLIER SM PSIG START 3000 PSIG STOP _____
<0.01 ppmv THC CH4

Time	Sweep Air (L/min)	Residence Number	Temperature (°F) Chamber Surf	Chamber Air	Ambient Surf	Ambient Air	Real-Time (ppmv) N/A		Sample Number	Comments
0959	5.0	0								-29"
1005 0945		1								CAN #603
1021 0951		2								
1027 0957		3		NA						
1033 0933		4								
1039 0939		5							~~BZVF01S01~~ AN575	CES
									LXF02E01 ~~AN584~~	CES
1049 0943									~~BZF01E01~~ AN576	
1051 0948									BZVF01E01	

COMMENTS: CONDUCTED IN VAN - NO WIND
TEFLON SURFACE

SITE DIAGRAM



CES/STOCKDISK

DAY 1

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/17/00 SAMPLERS CES

LOCATION BOEING SSFL CTL-III NORTH / ES-3

SURFACE DESCRIPTION DRY SOIL

CURRENT ACTIVITY N/A

INSTRUMENT TYPE N/A I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE N/A

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☒
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. 3H PHOTO TAKEN: Yes ☒ No ☐ MWH

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', 0-1 mph Wind at Seal, ____ mph

TEMP 100° RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

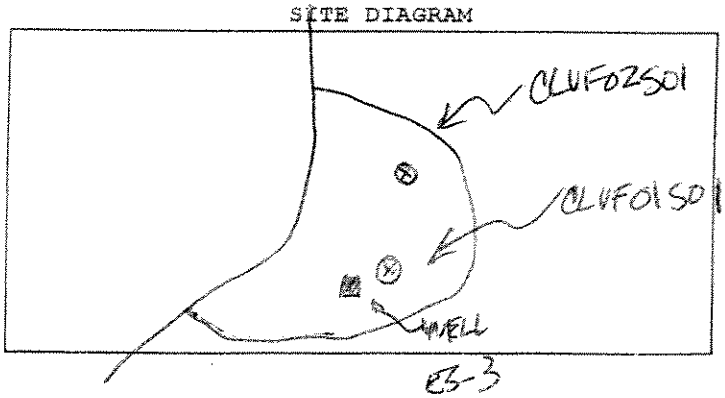
SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☒ New ☒ Used ☐

SWEEP AIR UHP CC CC426 SUPPLIER SM PSIG START 200 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F) Chamber Surf	Chamber Air	Ambient Surf	Ambient Air	Real-Time (ppmv) N/A		Sample Number	Comments
1216	5.0	0								-29'
1222	↓	1								CAN #175
1228		2								
1234		3								
1240		4								
1246	←	5	111°	105°	119°	100			CLIF01S01	MV577
1306	START		126°		122°					

COMMENTS:

SITE DIAGRAM



9N

CES/STOCKDISK

Day 1

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/18/02 SAMPLERS CES

LOCATION ~~BOEING~~ SSFL CTL-III (NORTH) / ES-3

SURFACE DESCRIPTION Dry SOIL

CURRENT ACTIVITY N/A

INSTRUMENT TYPE N/A I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE N/A

PROJECT QC: BACKGROUND MEASUREMENTS ☐ BLANK MEASUREMENTS ☐ REPLICATE MEASUREMENTS ☐
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. F PHOTO TAKEN: Yes ☐ No ☐ _____

CHAMBER SEAL YES CONDENSATION: Yes ☐ No ☐ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☐ P.Sun ☐ Cloudy ☐ Wind at 5', ____ mph Wind at Seal, ____ mph

TEMP 104P RAIN: Yes ☐ No ☐ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☐ Dry Wipe ☐ None ☐ _____

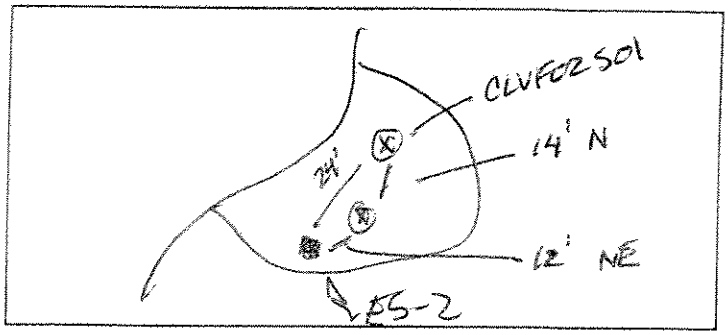
SAMPLE LINE: BACK FLUSHED PRIOR TO START ☐ PURGED PRIOR TO SAMPLING ☐ New ☐ Used ☐

SWEEP AIR UHP CC CA1773 SUPPLIER SM PSIG START _____ PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F) Chamber Surf	Chamber Air	Ambient Surf	Ambient Air	Real-Time (ppmv) N/A		Sample Number	Comments
1218	5.0	0								-29"
1224	↓	1								CAN #416
1230		2								
1236		3								
1242		4								
1248 ←	↓	5	129°	119°	124°	104P			CLVF02 SOL	MV578
1309										

COMMENTS:

SITE DIAGRAM



CES/STOCKDISK

DAY 1

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/17/06 SAMPLERS CES

LOCATION BOEING SSFL CTL-111 SOUTH/RD-46

SURFACE DESCRIPTION DRY SOIL

CURRENT ACTIVITY N/A

INSTRUMENT TYPE N/A I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE N/A

PROJECT QC: BACKGROUND MEASUREMENTS ☐ BLANK MEASUREMENTS ☐ REPLICATE MEASUREMENTS ☐
AMBIENT CONCENTRATIONS

CHAMBER I.D. F PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL YES CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', ____ mph Wind at Seal, ____ mph

TEMP 103° RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

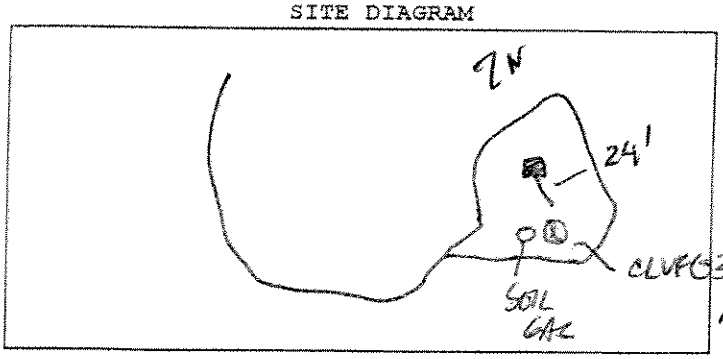
SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☒ New ☒ Used ☐

SWEEP AIR VHP CC CA1773 SUPPLIER SM PSIG START 1300 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F) Chamber Surf	Chamber Air	Ambient Surf	Ambient Air	Real-Time (ppmv) N/A		Sample Number	Comments
1334	5.0	0								~29'
1340	↓	1								CAV 4/80
1346		2								
1352	↓	3								
1358		4								
1404	←	5	141°	138°	125°	103°			CLVFC3501	MV 579

COMMENTS:

SITE DIAGRAM



CES/STOCKDISK

Day 1

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/17/06 SAMPLERS CES

LOCATION BOEING SSFL B1 SOUTH LRD-72

SURFACE DESCRIPTION Dry soil

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☒
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. H PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', 3-5 mph Wind at Seal, ____ mph

TEMP 118° RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☒ None ☐ _____

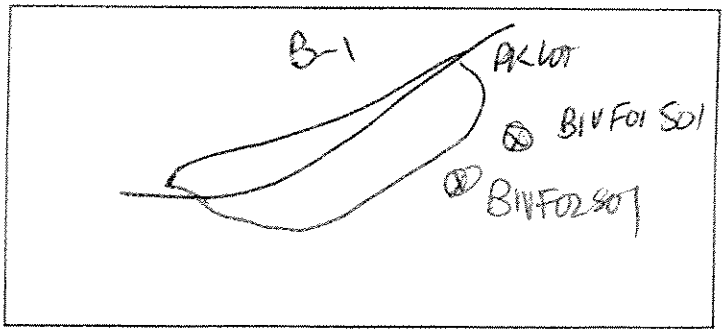
SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☒ New ☒ Used ☐

SWEEP AIR UHP CC CA1773 SUPPLIER SM PSIG START 1300 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F) Chamber Surf	Chamber Air	Ambient Surf	Ambient Air	Real-Time (ppmv)		Sample Number	Comments
1432	5.0	0					NA			-29⁴
1438	↓	1								4642
1444		2								
1450		3								
1456		4								
1502		5	147°	126°	136°	118°			BLVF01SOI	MV580

COMMENTS:

SITE DIAGRAM



CES/STOCKDISK

DAY1

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/17/96 SAMPLERS CES

LOCATION BORON SSFL B-1 SOUTH / RD-72

SURFACE DESCRIPTION DRY SOIL

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☐
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. F PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL YES CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', ____ mph Wind at Seal, ____ mph

TEMP 102 RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

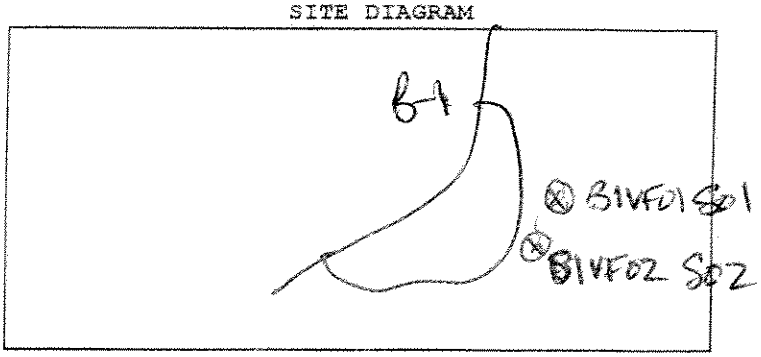
SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☒ New ☒ Used ☐

SWEEP AIR VHP CC 68612 SUPPLIER SM PSIG START 650 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F) Chamber Surf	Chamber Air	Ambient Surf	Ambient Air	Real-Time (ppmv) NA		Sample Number	Comments
1435	5.0	0								-29"
1441		1								#161
1447		2								
1453		3								
1459		4								
1505		5	141	126	134	102			B1VF02S01	MV581

COMMENTS:

SITE DIAGRAM



CES/STOCKDISK

Day 1

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/17/06 SAMPLERS CES

LOCATION BOEING SSFL LOX/RD-52A

SURFACE DESCRIPTION Dry Soil

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. ______ TYPE ______ ID NO. ______

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☑ BLANK MEASUREMENTS ☑ REPLICATE MEASUREMENTS ☑

AMBIENT CONCENTRATIONS ______

CHAMBER I.D. F PHOTO TAKEN: Yes ☑ No ☐ ______

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☑ BARM PRESS ______

AMBIENT CONDITIONS: Sun ☑ P.Sun ☑ Cloudy ☐ Wind at 5', 1-3 mph Wind at Seal, ____ mph

TEMP 101° RAIN: Yes ☐ No ☑ Comment ______

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☑ Dry Wipe ☐ None ☐ ______

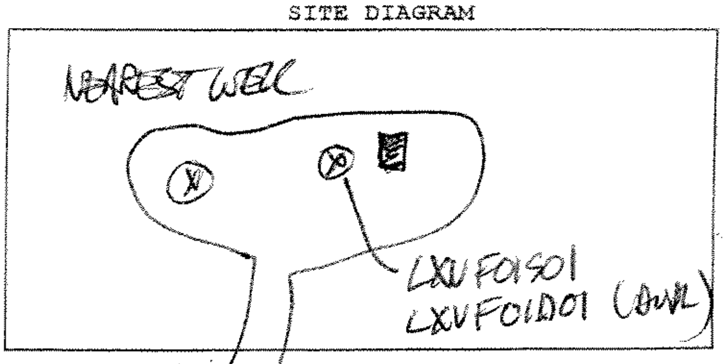
SAMPLE LINE: BACK FLUSHED PRIOR TO START ☐ PURGED PRIOR TO SAMPLING ☐ New ☐ Used ☐

SWEEP AIR UHP CC CB612 SUPPLIER SM PSIG START 600 PSIG STOP ______

Time	Sweep Air (L/min)	Residence Number	Temperature (°F) Chamber Surf	Chamber Air	Ambient Surf	Ambient Air	Real-Time (ppmv)		Sample Number	Comments
							NA			
1530	5.0	0								-29"/-29"
1556	↓	1								
1602		2								
1608		3								
1614		4							LXVF01S01	#308
1620		5	125°	109°	121°	101°		QS	~~LXVF01D~~	MV502
1626	AMPL								LXVF01D 01	MV503
										#321

COMMENTS:

SITE DIAGRAM



CES/STOCKDISK

DAY 1

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/18/06 SAMPLERS CES

LOCATION BOEING SSFL LOX/LD-52

SURFACE DESCRIPTION Dry Soil

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☐

AMBIENT CONCENTRATIONS _____

CHAMBER I.D. H PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☒ Cloudy ☐ Wind at 5', 1-3 mph Wind at Seal, ____ mph

TEMP 90° RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

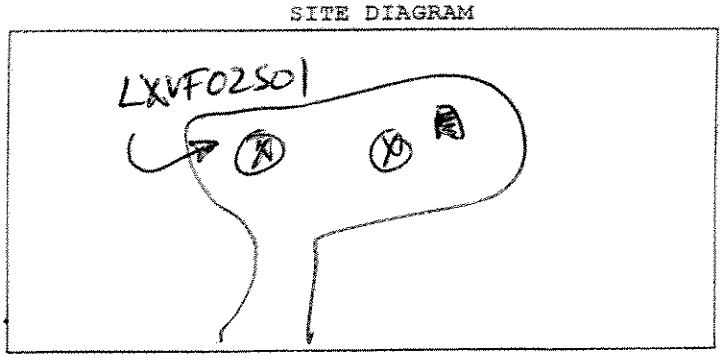
SAMPLE LINE: BACK FLUSHED PRIOR TO START ☐ PURGED PRIOR TO SAMPLING ☐ New ☐ Used ☐

SWEEP AIR UHP CC CA1773 SUPPLIER SM PSIG START 1200 PSIG STOP _____

~~1549~~ Time	Sweep Air (L/min)	Residence Number	Temperature (°F) Chamber Surf	Chamber Air	Ambient Surf	Ambient Air	Real-Time (ppmv) NA		Sample Number	Comments
~~1552~~	5.0	0								~29"
~~1558~~	↓	1								# 521
~~1604~~		2								
~~1610~~		3								
~~1616~~		4								
~~1622~~		5	116°	115°	116°	90°			LXVF02501	AV584

COMMENTS:

SITE DIAGRAM



CES/STOCKDISK

DAY 3
CONTROL
AM

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/19/06 SAMPLERS CES

LOCATION BERMO SSFL LOX; LXSV70-AM

SURFACE DESCRIPTION Dry SOIL

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☐ REPLICATE MEASUREMENTS ☐
AMBIENT CONCENTRATIONS

CHAMBER I.D. F PHOTO TAKEN: Yes ☒ No ☐

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5': ____ mph Wind at Seal, ____ mph

TEMP 78° RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☒ Wet Wipe ☐ Dry Wipe ☐ None ☐ _____

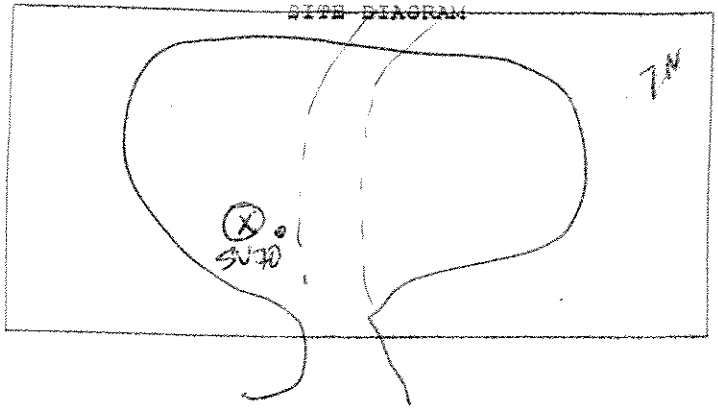
SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☐ New ☒ Used ☐

SWEEP AIR UHP cc 28991 SUPPLIER SM PSIG START 2000 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F) Chamber Surf	Chamber Air	Ambient Surf	Ambient Air	Real-Time (ppmv)		Sample Number	Comments
							NA			
0732	5.0	0								~29'
0738	↓	1								CAN#673
0744		2								
0750		3								
0756		4								
0802		5	87°	84°	86°	78°			(LXSV70-AM) MV592 LXVF03501	

COMMENTS: 2' W OF SV 70
CONTROL POINT
SVN IS LOW, SHADED SOIL IN
CHAMBER
LINES

SITE DIAGRAM



Day 3 control

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/19/06 SAMPLERS CB

LOCATION BOEING SSFL LCX LXSV 70-PM 4*/LAST CONTROL TEST

SURFACE DESCRIPTION DRY SOIL - SAME

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☐ REPLICATE MEASUREMENTS ☒
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. F PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', 2-3 mph Wind at Seal, ____ mph

TEMP 99° RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☒ New ☐ Used ☐

SWEEP AIR UHP CC 20991 SUPPLIER SM PSIG START 1300 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F)				Real-Time (ppmv)		Sample Number	Comments
			Chamber		Ambient					
			Surf	Air	Surf	Air	NA			
1503	5.0	0								-29°
1509	↓	1								CAN #687
1515		2								
1521		3								
1527	↓	4								
1533		5	139°	120°	125°	99° 100°			LXVF03504	MW600

Media Checklist

Method	Media	Sample ID	Times Start	Times Stop
Base				
TO-15	Can	T15-		
2,3	Can/Trap	G-		
NH3	Acid Imp	A-		
TO-17	Sorbent	T17-		
TO-11	DNPH	T11-		
Extended				
Ethanol	DI Imp	M-		
VFA Imp	DI Imp	V-		
Sulfur	Bag	S-		
TO-13	Sorbent	T13-		
TO-8	Base Imp	T8-		

SITE DIAGRAM

SAME LOCATION

DAY 3
2ND BLANK

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/19/96 SAMPLERS CES

LOCATION BOEING SSFL LDX

SURFACE DESCRIPTION TEFLON

CURRENT ACTIVITY NA

INSTRUMENT TYPE MA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☒
AMBIENT CONCENTRATIONS

CHAMBER I.D. F PHOTO TAKEN: Yes ☒ No ☐

CHAMBER SEAL Y-COLLAR, IN VAN CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', ____ mph Wind at Seal, ____ mph

TEMP _____ RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ SAME AS BETWEEN TESTS

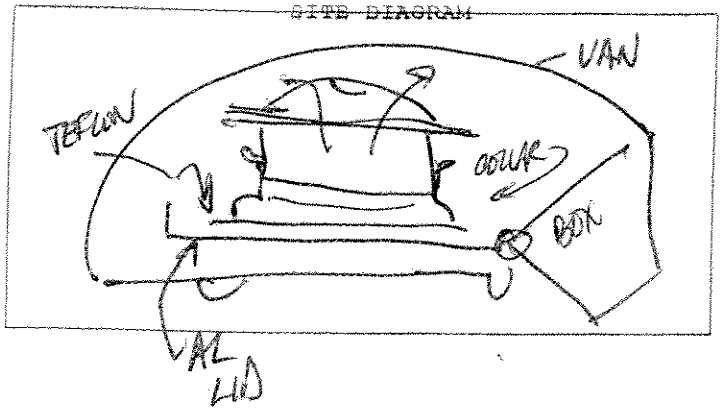
SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☒ New ☒ Used ☐

SWEEP AIR UHP CC 28991 SUPPLIER SM PSIG START 1300 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F) Chamber Surf	Chamber Air	Ambient Surf	Ambient Air	Real-Time (ppmv)		Sample Number	Comments
1340	50	0					NA			-29'
1346	↓	1								CAN #401
1352		2								
1358		3		NA						
1404		4			IN VAN IN SHADE					
1410		5							LXVF03E01	MU599
			103°	103°	(IN VAN)					

COMMENTS:

SITE DIAGRAM



DAY 3

LOX

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/19/06 SAMPLERS CES

LOCATION BOEING SSFL LXSV 69 LXVF06S01

SURFACE DESCRIPTION Dry Soil

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☑ BLANK MEASUREMENTS ☑ REPLICATE MEASUREMENTS ☑
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. F PHOTO TAKEN: Yes ☑ No ☐ _____

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☑ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☑ P.Sun ☐ Cloudy ☐ Wind at 5', 1-3 mph Wind at Seal, ____ mph

TEMP 95° RAIN: Yes ☐ No ☑ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☑ Dry Wipe ☐ None ☐ _____

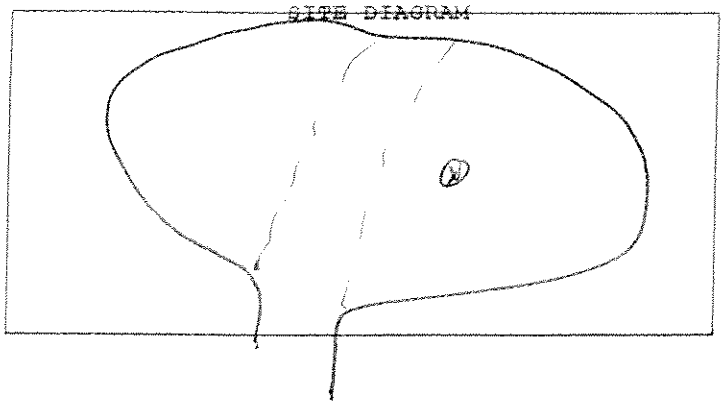
SAMPLE LINE: BACK FLUSHED PRIOR TO START ☑ PURGED PRIOR TO SAMPLING ☑ New ☑ Used ☐

SWEEP AIR UHP CC 28991 SUPPLIER SM PSIG START 1500 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F) Chamber Surf	Chamber Air	Ambient Surf	Ambient Air	Real-Time (ppmv) NA		Sample Number	Comments
1256	5.0	0								-29"
1302	↓	1								CAN #181
1308		2								
1314		3								
1320		4								
1326		5	128°	119°	125°	95°			LXVF06S01	MV598

COMMENTS: 1332 VEHICLE TRAFFIC

SITE DIAGRAM



Day 3
CONTROL
NOON

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/19/06 SAMPLERS CES

LOCATION BOEING SSFL 40X LXSV 70-MID DAY

SURFACE DESCRIPTION DRY SOIL

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☒
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. F PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', 2-5 mph Wind at Seal, ____ mph

TEMP 98° RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☒ New ☐ Used ☐

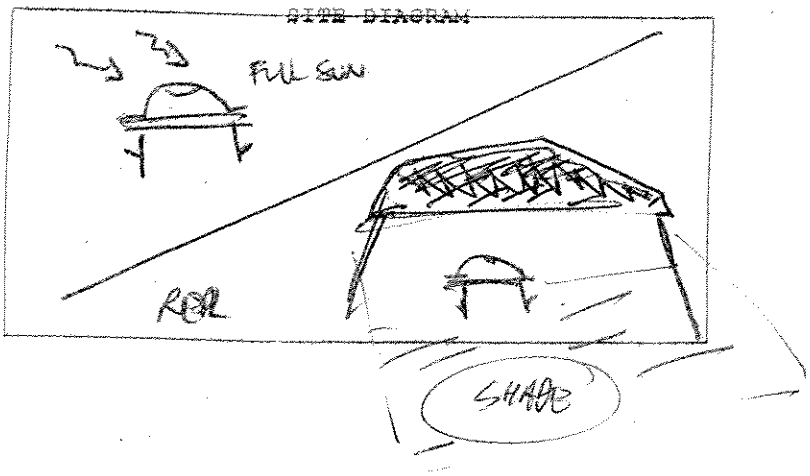
SWEEP AIR UHP CC 28991 SUPPLIER SM PSIG START 1600 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F) Chamber Surf	Chamber Air	Ambient Surf	Ambient Air	Real-Time (ppmv) NA		Sample Number	Comments
1149	5.0	0								-29
1155	↓	1								CAN #310
1201		2								
1207		3								
1213		4								
1219		5	137°	115°	130°	98°			LXVF03503	MV596
1223	-SHADE OVER LOCATION								REPLICATE	-29" #300
1243			105°	100°	100°	90°			LXVF03001	MV597

COMMENTS: NOTE - "REPLICATE" TAKEN (W) SHADE

-VEHICLE TRAFFIC 1155

SITE DIAGRAM



UA43
LOX

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/19/06 SAMPLERS CES

LOCATION BOEING SSFL LOX LXSV4B

SURFACE DESCRIPTION DRY SOIL

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☒
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. F PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', ____ mph Wind at Seal, ____ mph

TEMP 98° RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☒ New ☒ Used ☐

SWEEP AIR UHP CC 28991 SUPPLIER SM PSIG START 1700 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F) Chamber Surf	Chamber Air	Ambient Surf	Ambient Air	Real-Time (ppmv) NA		Sample Number	Comments
1022	5.0	0								-29" Hg
1028		1								CAN# 326
1034		2								
1040		3								
1046		4								
1052		5	126°	115°	122°	98°			LXVF05501	MV595

COMMENTS: WITHIN 2' SOIL GAS LOCKDOWN LXSV4B

SITE DIAGRAM

LOX

DAY 3
CONTROL

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/19/06 SAMPLERS CES

LOCATION BOEING SSFL LXSV70

SURFACE DESCRIPTION DRY SOIL - SAME LOCATION

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☐
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. F PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL YES CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', ____ mph Wind at Seal, ____ mph

TEMP 91° RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☐ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☐ New ☒ Used ☐

SWEEP AIR UHP CC 28991 SUPPLIER SM PSIG START 1800 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F) Chamber Surf	Chamber Air	Ambient Surf	Ambient Air	Real-Time (ppmv)		Sample Number	Comments
0932	50	0					NA			-29 4
0938	↓	1								CAN # 532
0944		2								
0950		3								
0950		4								
1002		5	114°	107°	112°	91°			LXVF03502	MV594

COMMENTS: ADDITIONAL AM CONTROL (LARGEST ΔT CHANGE)

→ MID MORNING (ADDED) SAM POINT

- VEHICLE TRAFFIC ~ 0950

SITE DIAGRAM

SAME POINT
LXSV70

DAY 3
LOX

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/19/06 SAMPLERS US

LOCATION BOEING SSFL LOX ~~LXVF~~ LXSV38

SURFACE DESCRIPTION DRY SOIL

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☐ BLANK MEASUREMENTS ☐ REPLICATE MEASUREMENTS ☐
AMBIENT CONCENTRATIONS

CHAMBER I.D. F PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', 1-3 mph Wind at Seal, ____ mph

TEMP 82° RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☐ PURGED PRIOR TO SAMPLING ☒ New ☐ Used ☐

SWEEP AIR VHP CC 28991 SUPPLIER SA PSIG START 1900 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F) Chamber Surf	Chamber Air	Ambient Surf	Ambient Air	Real-Time (ppmv)		Sample Number	Comments
0833	5.0	0					NA			-29 4
0839		1								CAN# 769
0845		2								
0851		3								
0857		4								
0903		5	98°	90°	99°	82°			LXVF04501	MV593

COMMENTS: ABOUT 5' WEST OF SOIL GAS LOCATION LXSV38

SITE DIAGRAM

LOX

Day 4 (Day 11

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/20/06 SAMPLERS CMS

OCATION BOEING SSFL LOX/RD-52A

SURFACE DESCRIPTION Dry Soil

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☒
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. _____ PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', 2-5 mph Wind at Seal, ____ mph

TEMP 1030 RAIN: Yes ☐ No ☐ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☒ New ☒ Used ☐

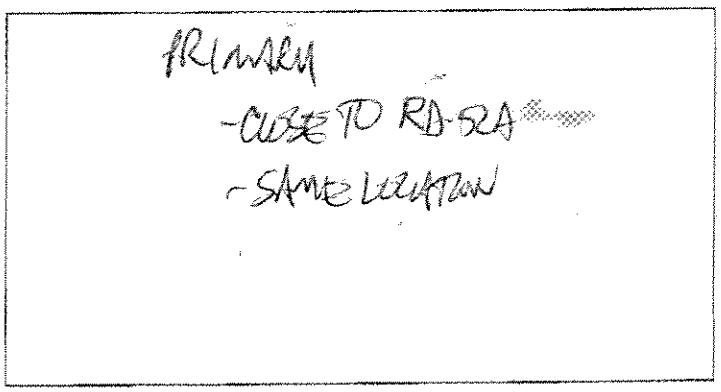
SWEEP AIR UHP CC _____ SUPPLIER SM PSIG START _ PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F)				Real-Time (ppmv)		Sample Number	Comments
			Chamber		Ambient					
			Surf	Air	Surf	Air	NA			
1150	5.0	0								-29"
1156		1								CAN# 525
1202		2								
1208		3								
1214		4								
1220		5	129°	114°	128°	103°			LXVF01	SO2 MV614
1226	↓									

Media Checklist

Method	Media	Sample ID	Times Start	Times Stop
Base				
TO-15	Can	T15-		
25.3	Can/Trap	G-		
NH3	Acid Imp	A-		
TO-17	Sorbent	T17-		
TO-11	DNPH	T11-		
Extended				
Ethanol	DI Imp	M-		
VFA Imp	DI Imp	V-		
Sulfur	Bag	S-		
TO-13	Sorbent	T13-		
TO-8	Base Imp	T8-		

SITE DIAGRAM



 4/4 (Day 1)

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/20/06 SAMPLERS CES

OCATION BOEING SSFL LOX/RD-52A

SURFACE DESCRIPTION Dry Soil

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☐ BLANK MEASUREMENTS ☐ REPLICATE MEASUREMENTS ☐
AMBIENT CONCENTRATIONS

CHAMBER I.D. _____ PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☐ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', ____ mph Wind at Seal, ____ mph

TEMP 103° RAIN: Yes ☐ No ☐ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☐ PURGED PRIOR TO SAMPLING ☐ New ☒ Used ☐

SWEEP AIR UHP CC _____ SUPPLIER SA PSIG START _ PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F)				Real-Time (ppmv)		Sample Number	Comments
			Chamber		Ambient					
			Surf	Air	Surf	Air	NA			
1151	5.0	0								-29
1157		1								CAN # 172
1203		2								
1209		3								
1215		4								
1221		5	129°	NA 119°	125°	103°			LXVF02502 MV615	

Media Checklist

Method	Media	Sample ID	Times Start	Times Stop
Base				
TO-15	Can	T15-		
25.3	Can/Trap	G-		
NH3	Acid Imp	A-		
TO-17	Sorbent	T17-		
TO-11	DNPH	T11-		
Extended				
Jhanol	DI Imp	M-		
VFA Imp	DI Imp	V-		
Sulfur	Bag	S-		
TO-13	Sorbent	T13-		
TO-8	Base Imp	T8-		

SITE DIAGRAM

DAY 4 (DAY 1)

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/20/06 SAMPLERS CES

OCATION BOEING SSFL B-1 SOUTH

SURFACE DESCRIPTION DRY SOIL - SAME LOCATION

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☐
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. H PHOTO TAKEN: Yes ☐ No ☐ _____

CHAMBER SEAL YES CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', 0-1 mph Wind at Seal, ___ mph

TEMP 100 RAIN: Yes ☐ No ☐ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☒ New ☒ Used ☐

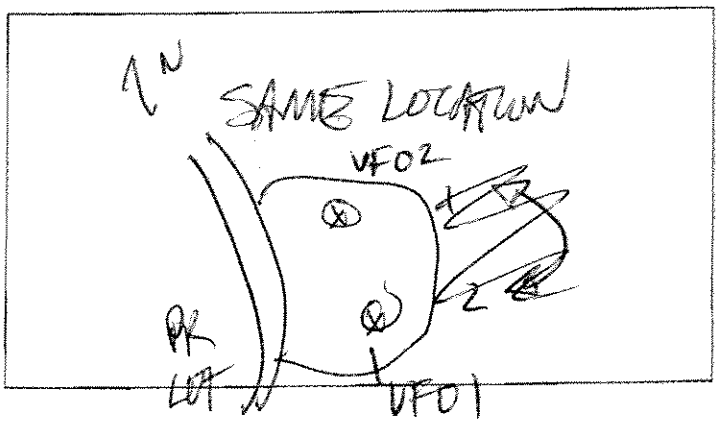
SWEEP AIR UHP CC _____ SUPPLIER SM PSIG START _ PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F)				Real-Time (ppmv)		Sample Number	Comments
			Chamber		Ambient					
			Surf	Air	Surf	Air	NA			
1049	5.0	0								-29" Hg
1055		1								CAN # 784
1101		2								
1107		3								
1113		4								
1119		5	147	132	141°	106°			BLUFORS02	~~MV 612~~ CES
1121										MV 613

Media Checklist

Method	Media	Sample ID	Times Start	Times Stop
Base				
TO-15	Can	T15-		
25.3	Can/Trap	G-		
NH3	Acid Imp	A-		
TO-17	Sorbent	T17-		
TO-11	DNPH	T11-		
Extended				
.hanol	DI Imp	M-		
VFA Imp	DI Imp	V-		
Sulfur	Bag	S-		
TO-13	Sorbent	T13-		
TO-8	Base Imp	T8-		

SITE DIAGRAM



SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/20/06 SAMPLERS CES

OCATION BOEING SSFL B-1 SOUTH

SURFACE DESCRIPTION DRY SOIL - SAME LOCATION

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☐ REPLICATE MEASUREMENTS ☒
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. F PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL YES CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', 0-1 mph Wind at Seal, ____ mph

TEMP 100 RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☐ PURGED PRIOR TO SAMPLING ☐ New ☒ Used ☐

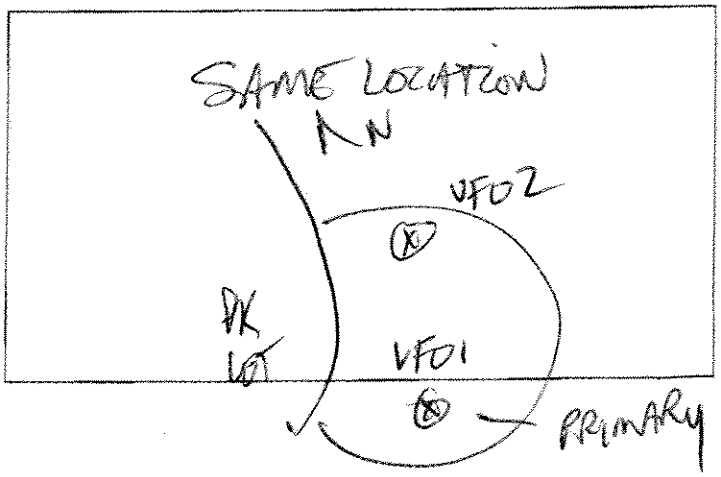
SWEEP AIR UHP CC _____ SUPPLIER SM PSIG START _ PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F)				Real-Time (ppmv)		Sample Number	Comments
			Chamber		Ambient					
			Surf	Air	Surf	Air	NA			
1050	5LP	0								-27" Hg
1056	↓	1								CAN# 687
1102		2								
1108		3								
1114		4								
1120		5	140°	128°	138°	109°			~~BIVF02 SO2 MV613~~	CES
									BIVF01 SO2 MV612	

Media Checklist

Method	Media	Sample ID	Times Start	Times Stop
Base				
TO-15	Can	T15-		
25.3	Can/Trap	G-		
NH3	Acid Imp	A-		
TO-17	Sorbent	T17-		
TO-11	DNPH	T11-		
Extended				
Methanol	DI Imp	M-		
VFA Imp	DI Imp	V-		
Sulfur	Bag	S-		
TO-13	Sorbent	T13-		
TO-8	Base Imp	T8-		

SITE DIAGRAM



 UNTY 4

(DAY 1)

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/20/05 SAMPLERS AS

OCATION BOEING SSFL CTL-III / SOUTH / AD-4L

SURFACE DESCRIPTION DRY SOIL

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☐ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☐
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. H PHOTO TAKEN: Yes ☐ No ☐ _____

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', ____ mph Wind at Seal, ____ mph

TEMP 98° RAIN: Yes ☐ No ☐ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☐ New ☒ Used ☐

SWEEP AIR UHP CC 28991 SUPPLIER SA PSIG START 100 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F)				Real-Time (ppmv)		Sample Number	Comments
			Chamber		Ambient					
			Surf	Air	Surf	Air	NA			
0942	5.0	0								-29"
0952	↓	1								CAN# 3602
0958		2								
1004	↓	3								
1010		4								
1016		5	124°	109°	119°	98°			CLVF0350L	MV611
1022										

Media Checklist

Method	Media	Sample ID	Times Start	Times Stop
Base				
TO-15	Can	T15-		
25.3	Can/Trap	G-		
NH3	Acid Imp	A-		
TO-17	Sorbent	T17-		
TO-11	DNPH	T11-		
Extended				
.hanol	DI Imp	M-		
VFA Imp	DI Imp	V-		
Sulfur	Bag	S-		
TO-13	Sorbent	T13-		
TO-8	Base Imp	T8-		

SITE DIAGRAM

SAME LOCATION

Day 4 (Day 1)

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/20/06 SAMPLERS CES

OCATION BOEING SSFL CTL-111 NORTH (ES-3

SURFACE DESCRIPTION Dry Soil - Same general location

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☒
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. F PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', 0-1 mph Wind at Seal, ___ mph

TEMP 93° RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☒ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☒ New ☒ Used ☐

SWEEP AIR UHP CC 28991 SUPPLIER SA PSIG START 1050 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F)				Real-Time (ppmv)		Sample Number	Comments
			Chamber		Ambient					
			Surf	Air	Surf	Air	NA			
0851	5.0	0								-29"
0857		1								CAN# 714
0903		2								
0909		3								
0915		4								
0921	↓	5	103°	99°	103°	93°			CLVFO1SOL	MV609

Media Checklist

Method	Media	Sample ID	Times Start	Times Stop
Base				
TO-15	Can	T15-		
25.3	Can/Trap	G-		
NH3	Acid Imp	A-		
TO-17	Sorbent	T17-		
TO-11	DNPH	T11-		
Extended				
Ethanol	DI Imp	M-		
VFA Imp	DI Imp	V-		
Sulfur	Bag	S-		
TO-13	Sorbent	T13-		
TO-8	Base Imp	T8-		

SITE DIAGRAM

CLOSEST TO ES-3

 DAY 59 (DAY 1)

SURFACE FLUX MEASUREMENT DATA FORM

DATE 8/7/2006 SAMPLERS CES

OCATION BORING SSFL CTL-111 NORTH EB-3 ; COLOCATED

SURFACE DESCRIPTION DRY SOIL, SAME LOCATION ; LOCATED

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☒
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. H PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL V CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', 0-1 mph Wind at Seal, ____ mph

TEMP 98° RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☒ New ☐ Used ☐

SWEEP AIR UHP CC CA1773 SUPPLIER SM PSIG START _ PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F)				Real-Time (ppmv)		Sample Number	Comments
			Chamber		Ambient					
			Surf	Air	Surf	Air	NA			
0855	5.0	0								-29
0901		1								CAN
0907		2								
0913		3								
0919		4								
0925		5	107°	105°	107°	98°			CLV402501	MUGID

Media Checklist

Method	Media	Sample ID	Times Start	Times Stop
Base				
TO-15	Can	T15-		
25.3	Can/Trap	G-		
NH3	Acid Imp	A-		
TO-17	Sorbent	T17-		
TO-11	DNPH	T11-		
Extended				
.hanol	DI Imp	M-		
VFA Imp	DI Imp	V-		
Sulfur	Bag	S-		
TO-13	Sorbent	T13-		
TO-8	Base Imp	T8-		

SITE DIAGRAM

SECONDARY POSITION
TO LOCATED

DAY 4 (REDAT DAY 1)

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/20/06 SAMPLERS CES

OCATION BOEING SSFL CONTROL SOUTH KD-05A

SURFACE DESCRIPTION DRY SOIL - SAME AS DAY 1

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☒
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. F PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL V CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', ____ mph Wind at Seal, ____ mph

TEMP _____ RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☒ Wet Wipe ☐ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☐ New ☒ Used ☐

SWEEP AIR UHP CC CA01773 SUPPLIER SM PSIG START 700 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F)				Real-Time (ppmv)		Sample Number	Comments
			Chamber		Ambient					
			Surf	Air	Surf	Air	NA			
0802	5.0	0								29"
0808	↓	1								CAN# 874
0814		2								
0822		3								
0828	V	4								
0832		5	95°	93°	94°	83°			BZUF01502	MV609

Media Checklist

Method	Media	Sample ID	Times Start	Times Stop
Base				
TO-15	Can	T15-		
25.3	Can/Trap	G-		
NH3	Acid Imp	A-		
TO-17	Sorbent	T17-		
TO-11	DNPH	T11-		
Extended				
.hanol	DI Imp	M-		
VFA Imp	DI Imp	V-		
Sulfur	Bag	S-		
TO-13	Sorbent	T13-		
TO-8	Base Imp	T8-		

SITE DIAGRAM

SAME

CAN 5
(DAY 21)

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/21/06 SAMPLERS CES

LOCATION BOEING SSFL DELTA - HAR-07

SURFACE DESCRIPTION DRY SOIL PRIMARY SAME LOCATION

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. ______ TYPE ______ ID NO. ______

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☒

AMBIENT CONCENTRATIONS ______

CHAMBER I.D. H PHOTO TAKEN: Yes ☒ No ☐

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☒ BARM PRESS ______

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', 1-2 mph Wind at Seal, ____ mph

TEMP 108 RAIN: Yes ☐ No ☒ Comment ______

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☒ New ☒ Used ☐

SWEEP AIR UHP CC 01773 SUPPLIER SM PSIG START _ PSIG STOP ______

Time	Sweep Air (L/min)	Residence Number	Temperature (°F) Chamber Surf	Chamber Air	Ambient Surf	Ambient Air	Real-Time (ppmv)		Sample Number	Comments
							NA			D
1040	5.0	0								-29" / -29
1046		1								CAN# / CAN#
1052		2								352 / 398
1058		3								
1104		4								
1110		5	124°	116°	122°	108°			DAVF01S02 (352)	MV621
DUPL 1116									DAVF01D01 (398)	MV622 ↑

Media Checklist

Method	Media	Sample ID	Times Start	Stop
Base				
TO-15	Can	T15-		
25.3	Can/Trap	G-		
NH3	Acid Imp	A-		
TO-17	Sorbent	T17-		
TO-11	DNPH	T11-		
Extended				
Methanol	DI Imp	M-		
VFA Imp	DI Imp	V-		
Sulfur	Bag	S-		
TO-13	Sorbent	T13-		
TO-8	Base Imp	T8-		

SITE DIAGRAM

SAME LOCATION

* MEDIA BLANK DAVF01E01 MV624 } COLLECTED @ RB ESTATES - NO VIABLE CAN'S } CES 7/21/06

SURFACE FLUX MEASUREMENT DATA FORM

DAY 5 (DAY 2)

DATE 7/21/06 SAMPLERS CES

OCATION BOEING SSFL DECPA / MAR-07

SURFACE DESCRIPTION DRY SOIL COLLECTED

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☐
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. _____ PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', 12 mph Wind at Seal, ____ mph

TEMP 103° RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☒ New ☐ Used ☐

SWEEP AIR VMP CC _____ SUPPLIER SM PSIG START _ PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F)				Real-Time (ppmv)		Sample Number	Comments
			Chamber		Ambient					
			Surf	Air	Surf	Air	NA			
1043	5.0	0								-29"
1049	↓	1								CAN# 380
1055		2								
1101		3								
1107		4								
1113		5	138°	119°	133°	103°			DAN F0252	MV623
1117										

Media Checklist

Method	Media	Sample ID		Times Start	Times Stop
Base					
TO-15	Can	T15-			
25.3	Can/Trap	G-			
NH3	Acid Imp	A-			
TO-17	Sorbent	T17-			
TO-11	DNPH	T11-			
Extended					
.hanol	DI Imp	M-			
VFA Imp	DI Imp	V-			
Sulfur	Bag	S-			
TO-13	Sorbent	T13-			
TO-8	Base Imp	T8-			

SITE DIAGRAM

Sample Location

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/21/05 SAMPLERS CES

OCATION BOEING SSFL COMPOUND AOC-24

SURFACE DESCRIPTION Dry Soil, Primarily - SAME LOCATION

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☐
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. _____ PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', 0-2 mph Wind at Seal, ___ mph

TEMP _____ RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☐ PURGED PRIOR TO SAMPLING ☒ New ☒ Used ☐

SWEEP AIR UHP CC ~~28873~~ 28991 SUPPLIER SM PSIG START ~~20~~ 2400 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F)				Real-Time (ppmv)		Sample Number	Comments
			Chamber		Ambient					
			Surf	Air	Surf	Air				
0946	5.0	0								29 4
0952	↓	1								CAN 214
0958		2								
1004		3								
1010		4								
1016		5	127°	122°	128°	109°			CFUF01S02	MW69

Media Checklist

Method	Media	Sample ID	Times Start	Times Stop
Base				
TO-15	Can	T15-		
25.3	Can/Trap	G-		
NH3	Acid Imp	A-		
TO-17	Sorbent	T17-		
TO-11	DNPH	T11-		
Extended				
.hanol	DI Imp	M-		
VFA Imp	DI Imp	V-		
Sulfur	Bag	S-		
TO-13	Sorbent	T13-		
TO-8	Base Imp	T8-		

SITE DIAGRAM

SAME LOCATION

Day 5 (Day 2)

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/21/06 SAMPLERS CES

OCATION BOEING SSFL COMPOUND A1 ES-24

SURFACE DESCRIPTION Dry soil, SAME LOCATION

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE _____

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☒
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. _____ PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', 0-1 mph Wind at Seal, ____ mph

TEMP _____ RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☐ PURGED PRIOR TO SAMPLING ☒ New ☒ Used ☐

SWEEP AIR UHP CC CA01773 SUPPLIER SA PSIG START 200 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F)				Real-Time (ppmv)		Sample Number	Comments
			Chamber		Ambient					
			Surf	Air	Surf	Air	NA			
0947	5D	0								-29
0953		1								CAN#822
0959		2								
1005		3								
1011		4							CFUFC25002	MV620
1017	↓	5	135	119	120	110				

Media Checklist

Method	Media	Sample ID	Start	Stop
Base				
TO-15	Can	T15-		
25.3	Can/Trap	G-		
NH3	Acid Imp	A-		
TO-17	Sorbent	T17-		
TO-11	DNPH	T11-		
Extended				
hanol	DI Imp	M-		
VFA Imp	DI Imp	V-		
Sulfur	Bag	S-		
TO-13	Sorbent	T13-		
TO-8	Base Imp	T8-		

Times

SITE DIAGRAM

SAME LOCATION

~~Sep 23 05 03:49p~~ ~~Tom Card~~ ~~360-802-5541~~ ~~p.1~~ 2/45

SURFACE FLUX MEASUREMENT DATA FORM (2 of 2)

DATE 7/21/06 SAMPLERS CBS

OCATION BOEING 45L FSDF TRS-54

SURFACE DESCRIPTION Dry soil - SAME LOCATION

CURRENT ACTIVITY NA

INSTRUMENT TYPE MV I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☒
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. F PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', ____ mph Wind at Seal, ____ mph

TEMP 102° RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☐ New ☒ Used ☐

SWEEP AIR UHP CC 28991 SUPPLIER SM PSIG START 500 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F)				Real-Time (ppmv)		Sample Number	Comments
			Chamber		Ambient					
			Surf	Air	Surf	Air	NA			
0856	5D	0								29"
0902	↓	1								CAN# 1772
0908		2								
0914		3								
0920	↓	4								↑
0926		5	110°	102°	116°	102°			FSVFO1SO2	MV618

Media Checklist

Method	Media	Sample ID		Times Start	Times Stop
Base					
TO-15	Can	T15-			
25.3	Can/Trap	G-			
NH3	Acid Imp	A-			
TO-17	Sorbent	T17-			
TO-11	DNPH	T11-			
Extended					
.hanol	DI Imp	M-			
VFA Imp	DI Imp	V-			
Sulfur	Bag	S-			
TO-13	Sorbent	T13-			
TO-8	Base Imp	T8-			

SITE DIAGRAM

SAME LOCATION

Day 5 (Day 2)

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/21/06 SAMPLERS CES

OCATION BOEING SSFL ; CONTROL NORTH / RD-92

SURFACE DESCRIPTION DRY SOIL

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☐ REPLICATE MEASUREMENTS ☐
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. F PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL YES CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', ____ mph Wind at Seal, ____ mph

TEMP 87 RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☐ PURGED PRIOR TO SAMPLING ☐ New ☐ Used ☐

SWEEP AIR VHP cc 28994 SUPPLIER SM PSIG START 600 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F)				Real-Time (ppmv)		Sample Number	Comments
			Chamber		Ambient					
			Surf	Air	Surf	Air	NA			
0801	5.0	0								-29
0807	↓	1								CAN #980
0813		2								
0819		3								
0825	↓	4								
0831		5	94°	90	95°	97			NCVF01SO2 MV617	

Media Checklist

Method	Media	Sample ID	Start	Stop
Base				
TO-15	Can	T15-		
25.3	Can/Trap	G-		
NH3	Acid Imp	A-		
TO-17	Sorbent	T17-		
TO-11	DNPH	T11-		
Extended				
hanol	DI Imp	M-		
VFA Imp	DI Imp	V-		
Sulfur	Bag	S-		
TO-13	Sorbent	T13-		
TO-8	Base Imp	T8-		

Times

SITE DIAGRAM

SAME LOCATION

 DAY 5 (DAY 2)

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/21/06 SAMPLERS CES

LOCATION BOEING SSFL RD-9 AREA / ES-21

SURFACE DESCRIPTION Dry Soil; SAME LOCATION

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☐
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. F PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ IN SHADE Wind at 5', ____ mph Wind at Seal, ____ mph

TEMP 81° RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☒ Wet Wipe ☐ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☒ New ☐ Used ☐

SWEEP AIR UHP CC 20294 SUPPLIER SM PSIG START 65D PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F)				Real-Time (ppmv)		Sample Number	Comments
			Chamber		Ambient					
			Surf	Air	Surf	Air	NA			
0716	5.0	0								-29
0722	↓	1								CAN # 601
0728		2								
0734		3								
0740	↓	4								
0746		5	80	80	80	81°			BTVF01SD2	MU616

Media Checklist

Method	Media	Sample ID	Times Start	Stop
Base				
TO-15	Can	T15-		
25.3	Can/Trap	C-		
NH3	Acid Imp	A-		
TO-17	Sorbent	T17-		
TO-11	DNPH	T11-		
Extended				
Ethanol	DI Imp	M-		
VFA Imp	DI Imp	V-		
Sulfur	Bag	S-		
TO-13	Sorbent	T13-		
TO-8	Base Imp	T8-		

SITE DIAGRAM

SAME LOCATION

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/21/06 SAMPLERS CES

LOCATION ROSEVILLE, SSFL DELTA - HAR07

SURFACE DESCRIPTION DRY SOIL PRIMARY SAME LOCATION

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☒
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. 4 PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL 4 CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', 1-2 mph Wind at Seal, ___ mph

TEMP 108 RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☐ New ☐ Used ☒

SWEEP AIR VHP CC 0773 SUPPLIER SM PSIG START _ PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F)				Real-Time (ppmv)		Sample Number	Comments
			Chamber		Ambient					
			Surf	Air	Surf	Air	NA			
1040	5.0	0								-29 / -28 D
1046		1								CAN* / CAN*
1052		2								352 / 398
1058		3								
1104	M	4								
1110		5	124°	116°	122°	108°			DAUFQ1502 (352)	MV621
1116									DAUFQ1D01 (398)	MV622

DUPL

Media Checklist

Method	Media	Sample ID	Times Start	Times Stop
Base				
TO-15	Can	T15-		
25.3	Can/Trap	G-		
NH3	Acid Imp	A-		
TO-17	Sorbent	T17-		
TO-11	DNPH	T11-		
Extended				
.hanol	DI Imp	M-		
VFA Imp	DI Imp	V-		
Sulfur	Bag	S-		
TO-13	Sorbent	T13-		
TO-8	Base Imp	T8-		

SITE DIAGRAM

SAME LOCATION

* MEDIA BLANK DAUFQ1E01 MV624 } COLLECTED AS ESTIMATES - NO VIABLE CAN'S } CES 7/21/06

SURFACE FLUX MEASUREMENT DATA FORM

Day 5 (Day 2)

DATE 7/21/06 SAMPLERS CES

OCATION BOEING SSFL DELTA / MAR-07

SURFACE DESCRIPTION DRY SOIL COLLECTED

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☐
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. _____ PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', 1-2 mph Wind at Seal, ___ mph

TEMP 103° RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☒ New ☐ Used ☐

SWEEP AIR VMP CC _____ SUPPLIER SM PSIG START _ PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F)				Real-Time (ppmv)		Sample Number	Comments
			Chamber		Ambient					
			Surf	Air	Surf	Air	NA			
1043	5.0	0								-29"
1049	↓	1								CAN# 380
1055	↓	2								
1101	↓	3								
1107		4								
1113		5	138°	119°	133°	103°			DAN F02502	MV623
1117										

Media Checklist

Method	Media	Sample ID	Times Start	Times Stop
Base				
TO-15	Can	T15-		
25.3	Can/Trap	G-		
NH3	Acid Imp	A-		
TO-17	Sorbent	T17-		
TO-11	DNPH	T11-		
Extended				
hanol	DI Imp	M-		
VFA Imp	DI Imp	V-		
Sulfur	Bag	S-		
TO-13	Sorbent	T13-		
TO-8	Base Imp	T8-		

SITE DIAGRAM

Same Location

 DAY 5 (DAY 2)

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/21/05 SAMPLERS CES

OCATION BOEING SSFL COMPOUND A/ES-24

SURFACE DESCRIPTION DRY SOIL, PRIMARY - SAME LOCATION

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☐
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. _____ PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', 0-2 mph Wind at Seal, ____ mph

TEMP _____ RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☐ PURGED PRIOR TO SAMPLING ☒ New ☒ Used ☐

SWEEP AIR UHP CC ~~CA0173~~ 28991 SUPPLIER SM PSIG START ~~200~~ 400 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F)				Real-Time (ppmv)		Sample Number	Comments
			Chamber		Ambient					
			Surf	Air	Surf	Air				
0946	5.0	0								-29 4
0952	↓	1								CAN# 214
0958		2								
1004		3								
1010		4								
1016		5	127°	122°	128°	109°			LFVE01S02	MW49

Media Checklist

Method	Media	Sample ID	Times Start	Times Stop
Base				
TO-15	Can	T15-		
25.3	Can/Trap	G-		
NH3	Acid Imp	A-		
TO-17	Sorbent	T17-		
TO-11	DNPH	T11-		
Extended				
,hanol	DI Imp	M-		
VFA Imp	DI Imp	V-		
Sulfur	Bag	S-		
TO-13	Sorbent	T13-		
TO-8	Base Imp	T8-		

SITE DIAGRAM

SAME LOCATION

Day 5 (Day 2)

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/21/00 SAMPLERS [illegible]

LOCATION [illegible] COMPOUND A / ES-24

SURFACE DESCRIPTION Dry soil, same location

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. ____ TYPE ____ ID NO. ____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☒

AMBIENT CONCENTRATIONS

CHAMBER I.D. ____ PHOTO TAKEN: Yes ☒ No ☐

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☒ BARM PRESS ____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', 0-1 mph Wind at Seal, ____ mph

TEMP ____ RAIN: Yes ☐ No ☒ Comment ____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☐ PURGED PRIOR TO SAMPLING ☒ New ☒ Used ☐

SWEEP AIR UHP CC CA01773 SUPPLIER SA PSIG START 2000 PSIG STOP ____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F) Chamber Surf	Chamber Air	Ambient Surf	Ambient Air	Real-Time (ppmv)		Sample Number	Comments
							NA			
0947	5.0	0								-29"
0953	↓	1								CAN# 822
0959		2								
1005		3								
1011		4							CFUF02S02	mV 620
1017	↓	5	132	119	120	110				

Media Checklist

Method	Media	Sample ID		Times Start	Stop
Base					
TO-15	Can	T15-			
25.3	Can/Trap	G-			
NH3	Acid Imp	A-			
TO-17	Sorbent	T17-			
TO-11	DNPH	T11-			
Extended					
Methanol	DI Imp	M-			
VFA Imp	DI Imp	V-			
Sulfur	Bag	S-			
TO-13	Sorbent	T13-			
TO-8	Base Imp	T8-			

SITE DIAGRAM

SAME LOCATION

SURFACE FLUX MEASUREMENT DATA FORM (Day 2)

DATE 7/21/06 SAMPLERS CBS

OCATION BOEING 45R ESDF IRS-54

SURFACE DESCRIPTION Dry soil - SAME LOCATION

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☒
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. F PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', ____ mph Wind at Seal, ____ mph

TEMP 102° RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☐ New ☒ Used ☐

SWEEP AIR UHP CC 28994 SUPPLIER SM PSIG START 500 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F)				Real-Time (ppmv)		Sample Number	Comments
			Chamber		Ambient					
			Surf	Air	Surf	Air	NA			
0856	5D	0						✓		29"
0902	↓	1						↓		CAN# 1772
0908		2								
0914		3								
0920		4								A
0926		5	110°	102°	118°	102°			PSVFO1502	MV618

Media Checklist

Method	Media	Sample ID	Times Start	Times Stop
Base				
TO-15	Can	T15-		
25.3	Can/Trap	G-		
NH3	Acid Imp	A-		
TO-17	Sorbent	T17-		
TO-11	DNPH	T11-		
Extended				
hanol	DI Imp	M-		
VFA Imp	DI Imp	V-		
Sulfur	Bag	S-		
TO-13	Sorbent	T13-		
TO-8	Base Imp	T8-		

SITE DIAGRAM

SAME LOCATION

DAY 5 (DAY 2)

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/21/06 SAMPLERS CES

OCATION BOEING SSFL ; CONTROL NORTH / RD-92

SURFACE DESCRIPTION DRY SOIL

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☐ REPLICATE MEASUREMENTS ☐
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. F PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL YES CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ Wind at 5', ____ mph Wind at Seal, ____ mph

TEMP 87 RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☐ Wet Wipe ☒ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☐ PURGED PRIOR TO SAMPLING ☐ New ☐ Used ☐

SWEEP AIR UHP cc 20991 SUPPLIER SM PSIG START 600 PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F)				Real-Time (ppmv)		Sample Number	Comments
			Chamber		Ambient					
			Surf	Air	Surf	Air	NA			
0801	5.0	0								-29
0807	↓	1								CAN #980
0813		2								
0819		3								
0825	↓	4								
0831		5	94°	90	95°	97			NCVF01502 MU617	

Media Checklist / Times

Method	Media	Sample ID	Start	Stop
Base				
TO-15	Can	T15-		
25.3	Can/Trap	G-		
NH3	Acid Imp	A-		
TO-17	Sorbent	T17-		
TO-11	DNPH	T11-		
Extended				
Ethanol	DI Imp	M-		
VFA Imp	DI Imp	V-		
Sulfur	Bag	S-		
TO-13	Sorbent	T13-		
TO-8	Base Imp	T8-		

SITE DIAGRAM

SAME LOCATION

 DAY 5 (DAY 2)

SURFACE FLUX MEASUREMENT DATA FORM

DATE 7/21/06 SAMPLERS CES

OCATION BOEING SSFL RD-9 AREA / ES-21

SURFACE DESCRIPTION Dry Soil ; SAME LOCATION

CURRENT ACTIVITY NA

INSTRUMENT TYPE NA I.D. NO. _____ TYPE _____ ID NO. _____

INSTRUMENT BASELINE NA

PROJECT QC: BACKGROUND MEASUREMENTS ☒ BLANK MEASUREMENTS ☒ REPLICATE MEASUREMENTS ☐
AMBIENT CONCENTRATIONS _____

CHAMBER I.D. F PHOTO TAKEN: Yes ☒ No ☐ _____

CHAMBER SEAL Y CONDENSATION: Yes ☐ No ☒ BARM PRESS _____

AMBIENT CONDITIONS: Sun ☒ P.Sun ☐ Cloudy ☐ IN SHADE Wind at 5', ____ mph Wind at Seal, ____ mph

TEMP 81° RAIN: Yes ☐ No ☒ Comment _____

PRIOR CHAMBER CLEANING: Full Wash ☒ Wet Wipe ☐ Dry Wipe ☐ None ☐ _____

SAMPLE LINE: BACK FLUSHED PRIOR TO START ☒ PURGED PRIOR TO SAMPLING ☒ New ☐ Used ☐

SWEEP AIR UHP CC 20094 SUPPLIER SM PSIG START 65D PSIG STOP _____

Time	Sweep Air (L/min)	Residence Number	Temperature (°F)				Real-Time (ppmv)		Sample Number	Comments
			Chamber		Ambient					
			Surf	Air	Surf	Air	NA			
0716	5.0	0								-29
0722	↓	1								CAN # 601
0728		2								
0734		3								
0740	↓	4								
0746		5	80°	80°	80°	81°			BTVF01SD2	MV616

Media Checklist

Method	Media	Sample ID	Times Start	Stop
Base				
TO-15	Can	T15-		
25.3	Can/Trap	C-		
NH3	Acid Imp	A-		
TO-17	Sorbent	T17-		
TO-11	DNPH	T11-		
Extended				
Methanol	DI Imp	M-		
VFA Imp	DI Imp	V-		
Sulfur	Bag	S-		
TO-13	Sorbent	T13-		
TO-8	Base Imp	T8-		

SITE DIAGRAM

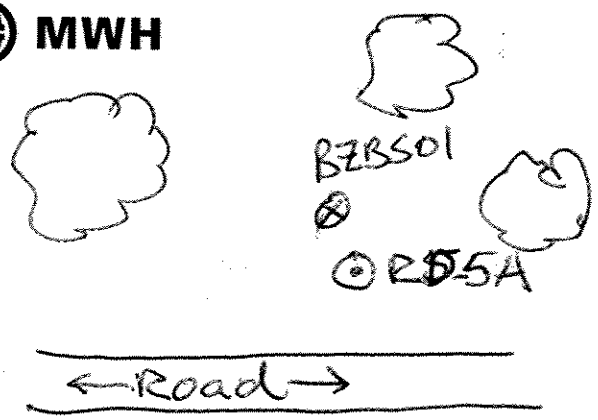
SAME LOCATION

Appendix C

Boring Logs

(Electronic)

MWH



Site Sketch Map

Boring #: B2BS01 MW#: — Sheet 1 of 2

Project: Vapor Migration Modeling Study

Job #: Site: Control Sbuilding

Logged By: E. VanderVelde Reviewed By: Eric VanderVelde

Drilling Contractor: —

Drill Rig Type/Method: Hand Auger

Drillers Name: Ben Cisneros

Borehole Diam./Drill Bit Type: 3" Total Depth 16 ft

Ref. Elev.

Sampler Type: Slam bar drive method

Depth to 1st Water (▽): — Time/Date: —

Drill Start Time/Date: 1400 7/27/06 Drill Finish Time/Date: 1530hrs 7/27/06

Depth to Water After Drilling (▼): — Time/Date: —

Well Completion Time/Date: —

Depth to other Water Bearing Zones: —

Soil Boring Backfill Time/Date: 1530hrs 7/27/06

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Gravel	Sand Coarse	Sand Medium	Sand Fine	Silt/clay
								ML	Silt (ML) Brown (5yr 4/3) Silt, dry, no odor					100
							1							
							2							
							3							
							4	ML	- Inc moisture - Slightly inc fine grained sand. Mois				10	90
	X X	X X		X X			5		- color change to reddish					
							6	ML	brown moist (5yr 5/3)				10	90
							7		- color change to yellowish brown, medium sand (10yr 5/4)				15	85
							8	SM	- Silty Sand, (SM) yellowish brown, fine grained to soft moist, no odor.				80	20
							9							
	X X	X X		X X			10	SM	Inc. Sand				85	15
							11							
							12							

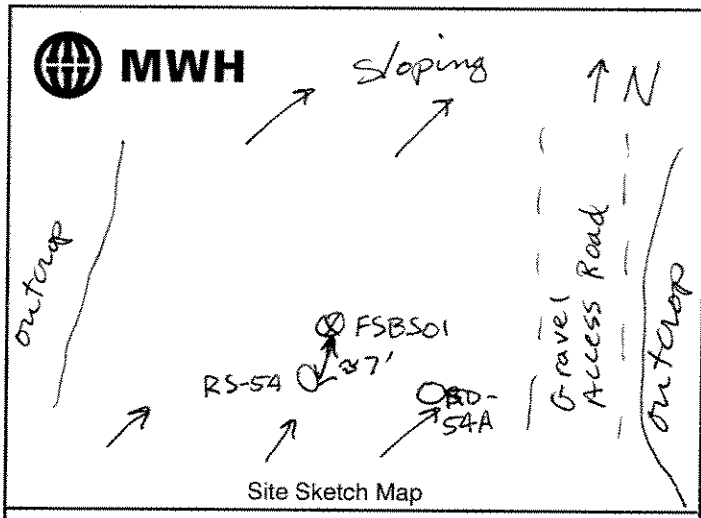
QA/QC

Boring #: B7BS01 MW#: Project: Vapor Migration Modeling Study Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % Of Sand: Coarse	Med.	Fine	Silt/Clay
							12							
							13	SP	Sand, (SP) poorly graded, light brown (7.5yr 6/3) silt to fine grained sand, moist, no odor				90	10
							14							
							15							
	X	X		X										
	X	X		X										
							16							
									Total Depth = 16 Ft bgs					
							17							
							18							
							19							
							20							
							21							
							22							
							23							
							24							
							25							
							26							
							27							
							28							
							29							
							30							
							31							
							32							

GWQC

MWH



Site Sketch Map

Boring #: FSBS01 MW#: Sheet 1 of 1

Project: SSFL - VMS

Job #: Site: FSDF Area

Logged By: JDalmat Reviewed By:

Drilling Contractor: BL Hall Inc

Drill Rig Type/Method: Hand Auger

Drillers Name: Ben

Borehole Diam./Drill Bit Type: 3" Total Depth 7.5 ft

Ref. Elev.

Sampler Type: Slam bar drive Method

Depth to 1st Water (▽): — Time/Date: —

Depth to Water After Drilling (▼): — Time/Date: —

Depth to other Water Bearing Zones: —

Drill Start Time/Date: 1135 7/27/06 Drill Finish Time/Date: 7/27/06 1240 hrs

Well Completion Time/Date: NA

Soil Boring Backfill Time/Date: 1250 hrs 7/27/06

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Gravel	Sand Coarse	Sand Medium	Sand Fine	Silt/clay
									Surface sloping 30-40° NE, low, dry grassy vegetation					
	X						1	ML	Sandy SILT 10YR 3/3 dark brown med stiff slightly moist	—	—	—	45	55/0
							2							
							3							
							4							
SO1	X			X					same	—	—	—	45	55/0
							5							
							6	SM-ML						
	X								SILT with sand and clay 10YR 3/3 stiff, slightly moist	-	—	—	40	40/20
SO2	X			X			7		same color increase clay	-	-	—	30	30/40
							8		Total Depth = 7.5 ft bgs					
							9							
							10							
							11							
							12							

QA/QC

MWH

Boring #: BTB502 MW#: — Sheet 1 of 2

Project: SSFL – Vapor Migration Study

Job #: Site: RD-9 Area

Logged By: J Dolmat Reviewed By: Eric Vanderveldt

Drilling Contractor: DH Hall Inc

Drill Rig Type/Method: Hand Auger

Drillers Name: Ben

Borehole Diam./Drill Bit Type: 3" Total Depth: 19.5 Ref. Elev.: 1762.5

Sampler Type:

Depth to 1st Water (▽): 13 ft Time/Date: 1014 7/27/06

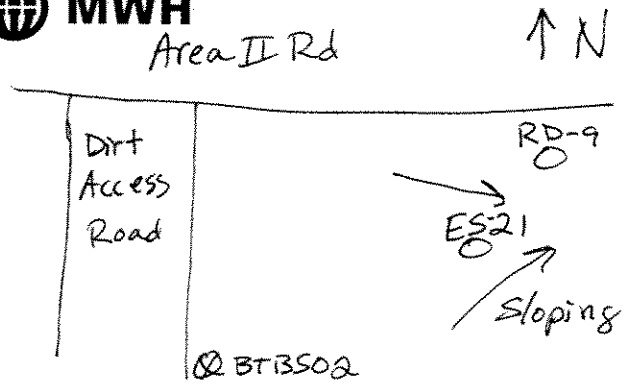
Depth to Water After Drilling (▼): — Time/Date: —

Depth to other Water Bearing Zones: —

Drill Start Time/Date: 8/6 7/27/06 Drill Finish Time/Date: 1035 7/27/06

Well Completion Time/Date: —

Soil Boring Backfill Time/Date: 1035hr 7/27/06



Site Sketch Map

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
									Surface low dry grassy vegitation sloping NE 5-10°					
	X						1	SM	silty sand 10YR 4/3 brown loose, dry	tr	—	10	60	30%
	X						2	SM	Sand with silt 10YR 3/3 dark brown, loose dry			10	75	15%
							3							
							4							
SO1	X			X			5	SM	Silty sand 2.5Y 3/2 very dark greyish Brown, loose some moist	—	—	10	50	40%
							6							
							7							
	X						8	SM	Silty Sand 10YR 3/2 very dark greyish brown, loose to med dense	—	—	15	55	30%
							9							
SO2	X			X			10	SM	increase sand and moisture	—	—	20	55	25%
							11							
							12							

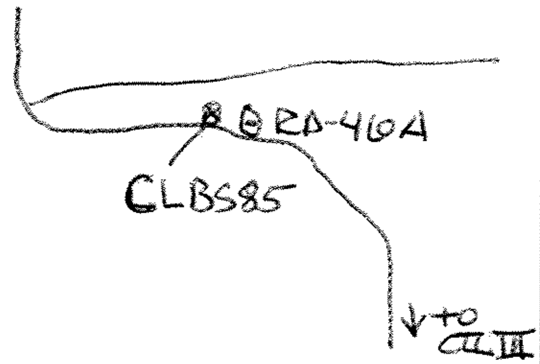
QA/QC

Boring #: BTB502 MW#: Project: SSFL – Vapor Migration Study Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Sand: Gravel	Coarse	Med.	Fine	Silt/Clay
							12							
									increase in moisture					
							13		hit GW					
							14	SM-SW	Sand with silt (10YR3/3)	–	10	40	35	15%
	X								dark Brown loose,					
S03	X			X			15		wet					
	X							SW	SAND 10YR(4/4) dark	10	30	30	20	10%
							16		yellowish Brown loose					
									wet, increase grain					
							17		size					
	X						18	SP	SAND 10YR 4/2 dark greyish	–	tr	30	60	0%
	X								Brown med density wet					
	X			X			19		Mon oxide staining					
									Mica Flakes					
							0							
									Total Depth = 195 ft bgs					
							1							
							2							
							3							
							4							
							5							
							6							
							7							
							8							
							9							
							0							
							1							
							2							

QA/QC

MWH



Site Sketch Map

Boring #: CLBS85 MW#: —	Sheet 1 of 2
Project: Vapor Migration Modeling Study	
Job #:	Site: CTL III
Logged By: E VanderVelde	Reviewed By: Eric VanderVelde
Drilling Contractor: —	
Drill Rig Type/Method: Hand Auger	
Drillers Name: Ben Cisneros/Steve Huggett	
Borehole Diam./Drill Bit Type: 3"	Total Depth: 16 ft
	Ref. Elev.
Sampler Type: Slam Bar Drive Method	
Depth to 1st Water (▽): — Time/Date: —	Drill Start Time/Date: 1540 7/27/06 Drill Finish Time/Date: 1700hrs 7/27/06
Depth to Water After Drilling (▼): — Time/Date: —	Well Completion Time/Date: —
Depth to other Water Bearing Zones: —	Soil Boring Backfill Time/Date: 1705hrs 7/27/06

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
							0–1	SM	Silty sand (SM) orangish brown, silt to fine grained sand, dry, no odor				60	40
							1							
							2							
							3							
							4	SM	- inc. moisture and increase weathered sandstone between 1 to 2 inches, angular.					
	X X	X X		X X			5	SM	- moist				60	40
							6							
							7		- no weathered sandstone					
							8	SM	- color change to reddish brown, moist, rootlets				60	40
							9							
	X X	X X		X X			10							
							11							
							12							

QA/QC

Boring #: LLBSS MW#: 1 Project: Vapor Migration Modeling Study Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % Of Sand: Coarse	Med.	Fine	Silt/Clay
							12							
							13	SM	- color change to yellowish brown, increased weathered sandstone 1-2 inch angular, moist				60	40
	X	X		X			14							
	X	X		X			15	SM					60	40
	X	X		X					Total depth 16 feet. - duplicate sample collected at 15.5-16.0 ft.					
							16							
							17							
							18							
							19							
							20							
							21							
							22							
							23							
							24							
							25							
							26							
							27							
							28							
							29							
							30							
							31							
							32							

QA/QC

MWH

Boring #: LXB523 MW#: Sheet 1 of 1

Project: SSFL ~~Vapor~~ LOX Soil/Source Inv.

Job #: Site: LOX

Logged By: JDalmat Reviewed By: Eric Uecker, PG

Drilling Contractor: Hydrogeo Spectrum

Drill Rig Type/Method: Geoprobe - Direct push

Drillers Name: Alex Christensen

Borehole Diam./Drill Bit Type: 1.5" Total Depth 5.5 Ref. Elev.

Sampler Type: Direct Push

Drill Start Time/Date: 1035 7/26/06 Drill Finish Time/Date: 1135 7/26/06

Well Completion Time/Date: —

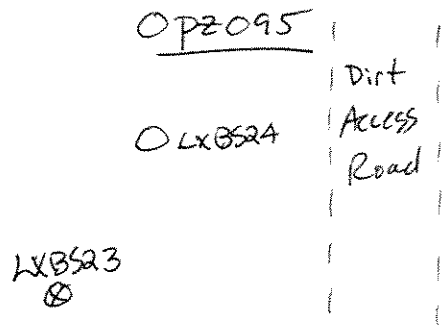
Soil Boring Backfill Time/Date: 1130hr 7/26/06

Depth to 1st Water (▽): — Time/Date: —

Depth to Water After Drilling (▼): — Time/Date: —

Depth to other Water Bearing Zones:

Site Sketch Map



PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Gravel	Sand Coarse	Sand Medium	Sand Fine	Silt/clay
									Surface low dry vegetation sloping SW 0-10°					
SO1	X			X			1	ML	Sandy SILT 10YR 4/3 brown loose, dry	—	—	tr	40	60%
							2							
	X						3	SM	silty Sand 10YR 4/4 dark yellowish Brown, loose slightly moist	—	—	20	40	40%
							4							
SO2	X			X			5	SM	silty sand with clay 10YR 3/4 dark yellowish Brown med dense increasing moisture	—	—	20	30	30%
							6							
							7		Total Depth = 5.5 ft bgs					
							8							
							9							
							10							
							11							
							12							

QA/QC

MWH

Boring #: LXBS24 MW#: Sheet 1 of 1

Project: SSFL – Vapor Migration Study

Job #: Site: LOX

Logged By: JDolmat Reviewed By: Eric Vanderlaan

Drilling Contractor: HydroGeoSpectrum

Drill Rig Type/Method: geo probe – Direct push

Drillers Name: Alex Christensen

Borehole Diam./Drill Bit Type: 1.5" Total Depth 10.5 ft

Ref. Elev.

Sampler Type: Direct Push

Drill Start Time/Date: 7/26/06 1145 Drill Finish Time/Date: 1215 7/26/06

Well Completion Time/Date:

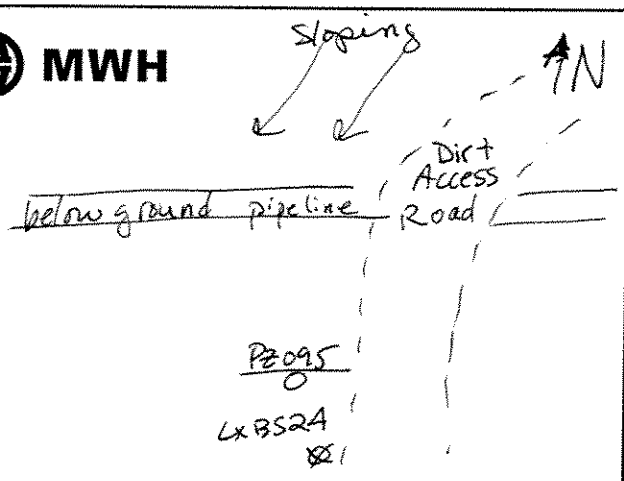
Soil Boring Backfill Time/Date: 1220 7/26/06

Depth to 1st Water (▽): — Time/Date: —

Depth to Water After Drilling (▼): — Time/Date: —

Depth to other Water Bearing Zones:

Site Sketch Map



PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Gravel	Sand Coarse	Sand Medium	Sand Fine	Silt/clay
									surface low dry vegitation SW 0-10° sloping					
S01	X			X			1 ML		sandy SILT 10YR 4/3 brown loose, dry	—	—	tr	40	60%
							2							
							3							
							4							
S02	X			X			5		Silty SAND 10YR 4/4 dark yellowish Brown, loose, slightly moist	—	—	20	45	35%
							6							
							7							
							8							
							9							
S03	X			X			10		SAND with silt and clay 10YR 3/2 very dark greyish Brown wet dense, moist	—	—	10	45	25/100
							11							
							12		Total Depth = 10.5 ft bgs					

QA/QC

MWH

Boring #: LXBS25 MW#: Sheet 1 of 1

Project: SSFL – ~~Vapor Migration Study~~ LOX Soil Source Inv.

Job #: Site: LOX ~~Soil~~

Logged By: JDolmat Reviewed By: Eric Vandenbelde

Drilling Contractor: Geoprobe – Direct push

Drill Rig Type/Method: Hydrogeo Spectrum

Drillers Name: Alex Christensen

Borehole Diam./Drill Bit Type: 1.5" Total Depth 10.5 ~~ft~~ bgs

Ref. Elev.

Sampler Type: Direct Push

Depth to 1st Water (▽): — Time/Date: —

Depth to Water After Drilling (▼): — Time/Date: —

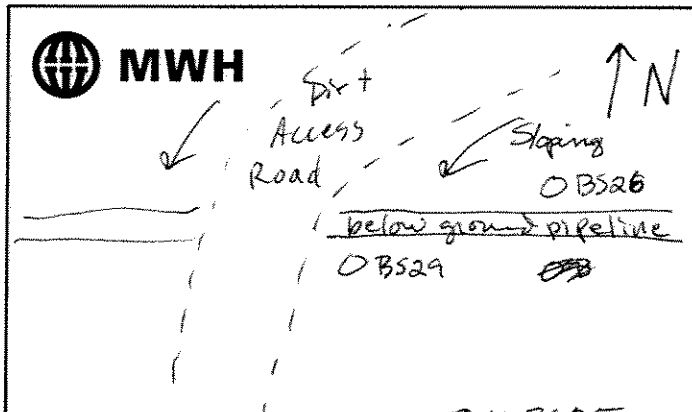
Depth to other Water Bearing Zones:

Drill Start Time/Date: 1228 7/20/06 Drill Finish Time/Date: 1330 7/20/06

Well Completion Time/Date: —

Soil Boring Backfill Time/Date: 1335 7/20/06

Site Sketch Map



PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Gravel	Sand Coarse	Sand Medium	Sand Fine	Silt/clay
									Surface low, dry grassy vegetation, sloping SW 0-10°					
	X			X			1	ML	SANDY SILT 10YR 4/3 soft brown loose dry	—	—	tr	40	60/10
							2							
							3	SM	silty SAND 10YR4/4 dark yellowish Brown loose, slightly moist	—	—	20	40	40/0
							4							
	X			X			5	SM	Silty SAND with clay 10YR4/3 dark yellowish brown med dense increasing moisture	—	—	10	40	30/20
							6							
							7							
							8							
							9							
	X			X			10	SM	Same Total Depth = 10.5 ft bgs	—	—	10	40	30/20
							11							
							12							

QA/QC

MWH

Boring #: LXBS26 MW#: Sheet 1 of 1

Project: SSFL – LOX Soil Source Inv. ~~Vapor Migration Study~~

Job #: Site: LOX

Logged By: JDolmat Reviewed By:

Drilling Contractor: Hydrogeo Spectrum

Drill Rig Type/Method: Direct Push / geoprobe

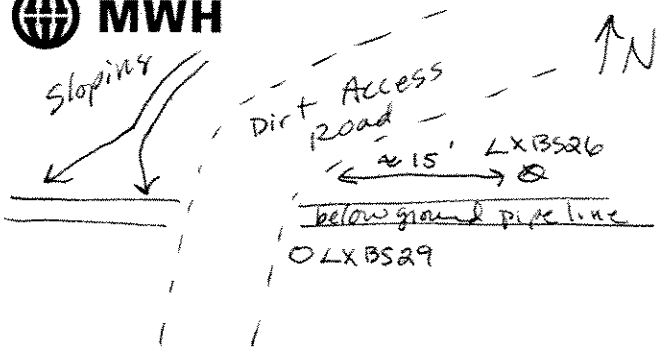
Drillers Name: Alex Christensen

Borehole Diam./Drill Bit Type: 1.5" Total Depth 10.5 ft

Ref. Elev.

Sampler Type: Direct Push

Site Sketch Map



Depth to 1st Water (▽): — Time/Date: —

Depth to Water After Drilling (▼): — Time/Date: —

Depth to other Water Bearing Zones: —

Drill Start Time/Date: 1503 7/20/06 Drill Finish Time/Date: 1600 7/20/06

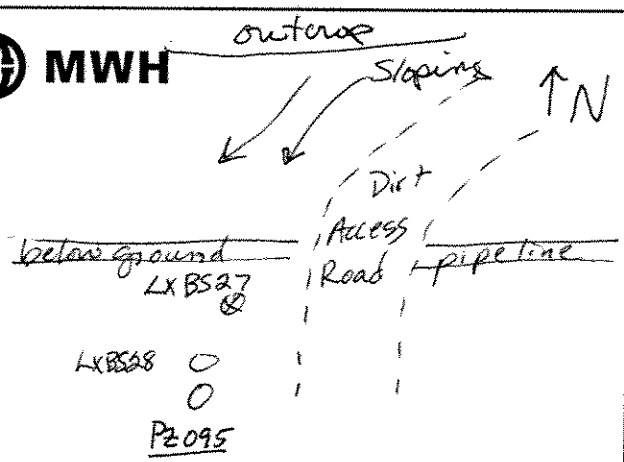
Well Completion Time/Date: —

Soil Boring Backfill Time/Date: 1605 7/20/06

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Gravel	Sand Coarse	Sand Medium	Sand Fine	Silt/clay
									Surface low, dry, grassy vegitation					
	X						1	ML	Sandy SILT 10YR 4/3 brown loose dry	—	—	tr	40	60%
							2							
	X						3	SM	Silty SAND 10YR 4/4 dark yellowish brown, loose, slightly moist	—	—	20	40	40%
							4							
							5							
SO1	X			X			6	SM	Silty SAND with clay 10YR 3/4 dark yellowish Brown med dense	—	—	20	30	30/20
							7		increasing moisture					
							8							
							9							
SO2	X			X			10	SP	Sand with silt and clay 10YR 3/2 very dark greyish Brown	—	—	10	40	30/20
							11		med dense, moist					
							12		Total Depth = 10.5 ft bgs					

QA/QC

MWH



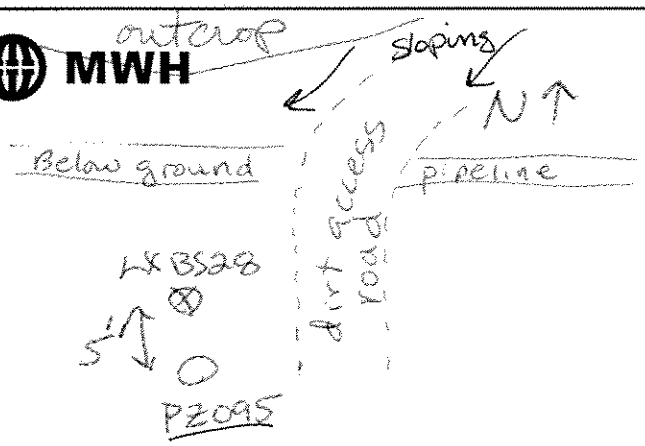
Site Sketch Map

Boring #: LX BS27 MW#:	Sheet 1 of
Project: SSFL - Vapor Migration Study	
Job #: Site: LOX	
Logged By: J Dolmat Reviewed By: Eric Vandenfelde	
Drilling Contractor: Hydro geo Spectrum	
Drill Rig Type/Method: geoProbe - Direct push	
Drillers Name: Alex Armstrong	
Borehole Diam./Drill Bit Type: 1.5"	Total Depth 15.5 ft / Ref. Elev.
Sampler Type: Direct Push	
Depth to 1st Water (▽): — Time/Date: —	Drill Start Time/Date: 1315 7/26/06 Drill Finish Time/Date: 1400 7/26/06
Depth to Water After Drilling (▼): — Time/Date: —	Well Completion Time/Date: —
Depth to other Water Bearing Zones: —	Soil Boring Backfill Time/Date: 1405 hrs 7/26/06

	PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
										surface low dry grassy vegetation, sloping 5-10° SW					
S01		X			X			1	ML	sandy silt 10YR 4/3 brown loose, dry	—	—	tr	40	60%
S02		X			X			3	SM	silty sand 10YR 4/4 dark yellowish brown, loose, moist	—	—	20	40	40%
S03		X			X			5	SM	silty sand with clay 10YR 3/4 dark yellowish Brown med dense, increasing moisture with depth	—	—	20	30	30/25
S04		X			X			7	SM	sandy silty sand with clay 10YR 3/2 very dark greyish Brown med dense, moist, slight odor increasing moisture w/ depth	—	—	20	25	30/25
S05		X			X			15	SM	silty sand with clay 2.5Y 3/2 very dark greyish Brown semi dense, moist	—	—	15	25	25/35

QA/QC

MWH



Site Sketch Map

Boring #: LX BS28 MW#: LOX Sheet 1 of 2

Project: SSFL ~~4HS~~ Soil Source

Job #: Site: LOX

Logged By: J Dalmat Reviewed By: Eric Vanderkeld

Drilling Contractor: BC Hall Inc

Drill Rig Type/Method: Hand Auger to 5'

Drillers Name: Ben

Borehole Diam./Drill Bit Type: 3" / HA

Total Depth: 15.5'

Ref. Elev.:

Sampler Type: Drive Sampler 5' +

Depth to 1st Water (▽): — Time/Date: —

Drill Start Time/Date: 1030 7/25/06 Drill Finish Time/Date: 1120 7/25/06

Depth to Water After Drilling (▼): — Time/Date: —

Well Completion Time/Date: —

Depth to other Water Bearing Zones:

Soil Boring Backfill Time/Date: 1125 7/25/06

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
									surface sloping SW 5-10° dry, low vegitation					
							1							
							2							
	X							SM	sand with silt 10yR 4/4 dark yellowish Brown	—	10	40	30	20%
							3		loose, moist					
							4							
	X							SM	Silty sand w/trc clay 10yR 3/4	—	10	30	15	25%
S01	X			X			5		dark yellowish Brown med dense, moist					
	X						6	SM	sand with Silt 10yR 4/4 dark yellowish Brown	—	10	40	30	20%
							7		loose moist					
	X							SM	silty sand with clay 10yR 3/3	—	10	20	20	50/20
							8		dark Brown med dense moist					
							9							
								ML	Silt w/sand + clay 10yR 3/2 very dark greyish Brown	—	tr	20	25	30/25
S02	X			X			10		med dense, moist					
							11							
							12							

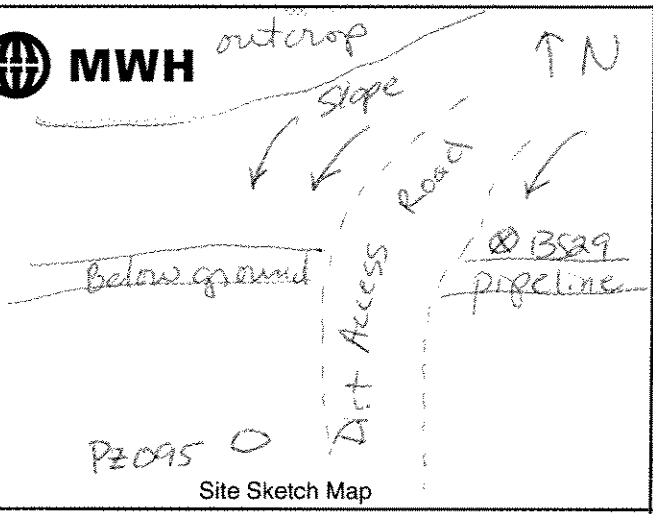
QA/QC

Boring #: LXB28 MW#: Project: SSFL-VMS Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis.	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Gravel	Sand: Coarse	Sand: Med.	Sand: Fine	Silt/Clay
	X						1 2	CL	Silty CLAY with Sand (10YR 3/1) very dark gray, med stiff, moist, low plasticity	—	—	10	15	20/55
	X						3 4 5	SM	SAND with silt 5YR 4/3 olive, loose, moist	—	10	40	20	30/0
	X						13 14		Silty SAND with clay 2.5Y 3/2 very dark greyish brown, loose, moist	—	10	20	20	25/25
	X						14 6	SP	~~Silty SAND~~ with clay, black with streaks of very	—	—	25	20	30/25
S03	X			X			15 7		dark greyish green (5GY 3/1) med dense Moist					
							8							
							9		Total Depth 15 1/2 ft bgs					
							0							
							1							
							2							
							3							
							4							
							5							
							6							
							7							
							8							
							9							
							0							
							1							
							2							

QA/QC

MWH



Site Sketch Map

Boring #: LX BS29 MW#: Sheet 1 of 1

Project: SSFL ~~Vapor Migration Study~~ LOX SG1/Source Inv.

Job #: Site: LOX

Logged By: J Dolmat Reviewed By: Eric Vanderslice

Drilling Contractor: BL Hall Inc

Drill Rig Type/Method: Hand Auger

Drillers Name: Ben Guerros

Borehole Diam./Drill Bit Type: 3" Total Depth 3.5 ft

Ref. Elev.

Sampler Type: HA - SS sleeves

Depth to 1st Water (▽): — Time/Date: —

Drill Start Time/Date: 922 7/25/05 Drill Finish Time/Date: 1010 7/25/05

Depth to Water After Drilling (▼): Time/Date:

Well Completion Time/Date: —

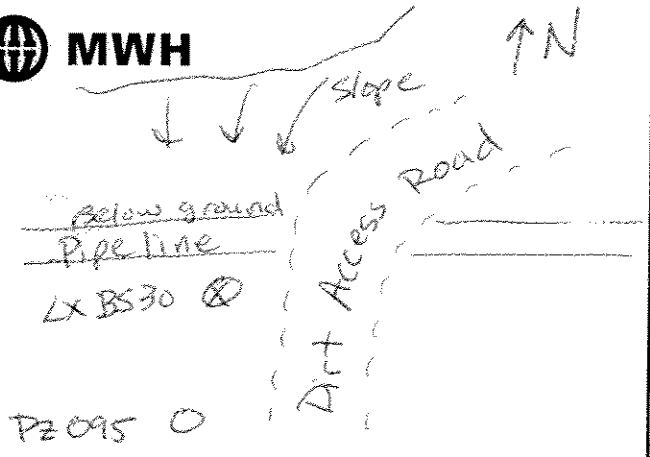
Depth to other Water Bearing Zones:

Soil Boring Backfill Time/Date: 1015 7/25/05

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of Gravel	Sand Coarse	Sand Medium	Sand Fine	Silt/clay
									Surface low dry vegetation sloping SW 5-10°					
							1		No distinguishable fill material observed					
							2							
	X			X					Silty SAND 10YR 4/4	tr	10	40	20	30%
SO1	X			X			3		dark yellowish brown, loose moist					
							4							
									Total Depth 3.5 ft bgs					
							5							
							6							
							7							
							8							
							9							
							10							
							11							
							12							

QA/QC

MWH



Site Sketch Map

Boring #: LX BS30 MW#:	Sheet 1 of 1
Project: SSFL - Vapor Migration Study	
Job #:	Site: LOX
Logged By: J Dalmat	Reviewed By: Eric VanderVelde
Drilling Contractor: BL Hall Inc	
Drill Rig Type/Method: Hand Auger	
Drillers Name: Ben Cisneros	
Borehole Diam./Drill Bit Type: 3"/HA	Total Depth 3.5 ft bgs; Ref. Elev.
Sampler Type:	
Depth to 1st Water (▽): — Time/Date: —	Drill Start Time/Date: 1022 7/25/06 Drill Finish Time/Date: 1100 7/25/06
Depth to Water After Drilling (▼): — Time/Date: —	Well Completion Time/Date: —
Depth to other Water Bearing Zones: —	Soil Boring Backfill Time/Date: 1105 hrs 7/25/06

PID/OVA	Sample Interval	Recovered (in.)	Blow Counts / 6 in.	Retained for Analysis	Casing Type & Size	Annulus Filler	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % Of: Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
							1		Surface sparse dry vegetation no distinguishable fill material observed					
							2							
SO1	↑			X			3	SM	Sand with silt loose 4/4 dark yellowish brown loose, moist	tr	10	40	20	30
	↓			X			4							
							5		Total Depth 3.5 ft bgs					
							6							
							7							
							8							
							9							
							10							
							11							
							12							

QA/QC

Appendix D

(Electronic)

D-1: Data Validation Report, July Sampling Activities

12269 East Vassar Drive, Aurora, CO 80014
720.535.5502, Fax 720.535.7555

DATA ASSESSMENT FORM

Project Title:	Vapor Migration Study
Project Manager:	D. Hambrick
Analysis/Method:	EPA Method TO-15
QC Level:	IV/V[1]
SDG:	206375
Matrix:	Air
No. of Samples:	3
No. of Reanalyses/Dilutions:	0
Date Reviewed:	September 23, 2006
Reviewer:	K. Shadowlight
Reference:	*MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 0), EPA Method TO-15* (1/99), and USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review* (2/94)
Samples Reviewed:	MV651, MV652, MV653

Data Validation Findings

	Findings	Qualifications
1. Sample Management	According to the case narrative for this SDG, the samples were received intact and in good condition, with acceptable canister pressures. The laboratory also provided canister QC certification records for the batches of canisters utilized. No problems were noted regarding sample handling and transport. The COC was signed and dated by appropriate field and laboratory personnel, and accounted for the samples and analyses presented in this SDG. According to a memo from MWH personnel dated 08/08/06, the EPA ID for sample MV650 was changed to MV653. The air samples were analyzed within 30 days of collection.	No qualifications were required.

	Findings	Qualifications
3. Calibration	The %RSDs for the initial calibrations and the %Ds for the continuing calibrations were all within the control limit of ≤30%.	No qualifications were required.
4. Method Blanks 082206-MS3	There was one method blank analyzed in association with the samples in this SDG. The laboratory also supplied a canister QC certification blank for the canister used in this SDG. No target compounds were detected in the canister QC certification blank. The method blank from QC batch 082206-MS3 had a detect between the reporting limit and the MDL for trichloroethene; however, the trichloroethene results were not retained (see Section 10).	No qualifications were required.
5. LCS/LCSD 082206-MS3	One LCS/LCSD pair was analyzed with the samples in this SDG. Spiked target compound trichloroethene was recovered below the laboratory QC limits of 70-130% in the LCS and vinyl chloride was recovered above QC limits in the LCSD only. All remaining recoveries were within the QC limits, and all RPDs were within the QC limit of ≤30%.	No qualifications were required.
6. Surrogates	The surrogates recoveries were within the method-established control limits of 70-130%.	No qualifications were required.
7. MS/MSD MV653	Spiked target compound cis-1,2-dichloroethene was recovered marginally below QC limits in both the MS and MSD analyses and trichloroethene was recovered below QC limits in the MSD only. The remaining recoveries were within laboratory QC limits of 70-130% and all RPDs were ≤30%.	The cis-1,2-dichloroethene result for sample MV653 was not retained (see Section 10); therefore, no qualifications were required.
8. Field QC FB: None ER: MV647 (SDG 206373) FD: None	The equipment blank had detects between the MDL and the reporting limit for 1,1-dichloroethene and tetrachloroethene, and detects above the reporting limits for all remaining target compounds.	As the sample results were not retained, no qualifications were required.

	Findings	Qualifications
10. Other	The laboratory used the acceptance criteria of -50%/+100% of the internal standard area of the associated continuing calibration; however, for validation purposes, the reviewer applied the more stringent Method TO-15 criteria of ±40% of the mean initial calibration internal standard area. All internal standard area recoveries were checked from the raw data. The samples in this SDG required lower volume analyses, or "dilution" due to either matrix interference or high concentrations of target compounds. MDLs and reporting limits were adjusted appropriately for dilution analysis. Results were reported by the laboratory in both ppbv and units of $\mu g/m^3$. Isopropanol leak tests were not performed on the samples in this SDG.	No qualifications were required All results for both samples were rejected, "R."
Comments	None.	None.

Level IV/V validation consists of cursory review of the summary forms and minimal review of the raw data as necessary. Based on the Level IV report it was determined by the reviewer that additional items required review. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed. Criteria not reviewed included instrument performance, analytical sequence, initial calibration, continuing calibration, compound identification, and compound quantification.

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206375
Laboratory Number: 02

File: 0637502C.D
Description: MV651
Can/Tube#: 654
Sam_Type: SA
QC_Batch: 082206-MS3
Air Volume: 5 ml

Date Sampled: 07/28/06 **Time:** 15:03
Date Received: 07/31/06
Date Extracted:
Date Analyzed: 08/22/06 **Time:** 18:26
Can Dilution Factor: 1.44 3
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75-01-4	Vinyl chloride	0.543	2.880	0.543	1.434	7.601	1.434	U
75-35-4	1,1-Dichloroethene	0.334	2.880	0.334	1.368	11.785	1.368	U
156-60-5	trans-1,2-Dichloroethene	1.563	2.592	40.096	6.399	10.611	164.142	
156-59-2	cis-1,2-Dichloroethene	2.438	2.880	66.465	9.978	11.785	271.979	
79-01-6	Trichloroethene	0.235	2.880	436.656	1.302	15.932	2,415.622	
127-18-4	Tetrachloroethene	0.232	2.880	0.664	1.629	20.189	4.654	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.214	107	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Rep Qual → R
Qual code → *10

level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206375**
Analytical Method: TO-15 SIM **Laboratory Number: 03**

File:	0637503B.D	**Date Sampled:**	07/28/06	**Time:**	16:09
Description:	MV652	**Date Received:**	07/31/06		
Can/Tube#:	165	**Date Extracted:**			
Sam_Type:	SA	**Date Analyzed:**	08/22/06	**Time:**	19:13
QC_Batch:	082206-MS3	**Can Dilution Factor:**	4.95		3
Air Volume:	20 ml	**Not Detected Flag:**	U		

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75-01-4	Vinyl chloride	0.467	2.475	0.467	1.232	6.532	1.232	U
75-35-4	1,1-Dichloroethene	0.287	2.475	0.287	1.175	10.128	1.175	U
156-60-5	trans-1,2-Dichloroethene	1.343	2.228	1.343	5.499	9.119	5.499	U
156-59-2	cis-1,2-Dichloroethene	2.095	2.475	2.095	8.575	10.128	8.575	U
79-01-6	Trichloroethene	0.202	2.475	154.924	1.119	13.692	857.055	
127-18-4	Tetrachloroethene	0.200	2.475	0.436	1.400	17.350	3.054	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.212	106	70-130	

Rev Qual | Qual code
R | 710

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV/V

Report File Name: 20637503.MS3
Printed on 8/23/2006

Environmental Analytical Service
Page 1 of 1

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206375**
Analytical Method: TO-15 SIM **Laboratory Number: 01**

File:	0637501B.D	**Date Sampled:**	07/28/06	**Time:**	9:28
Description:	MV653	**Date Received:**	07/31/06		
Can/Tube#:	791	**Date Extracted:**			
Sam_Type:	SA	**Date Analyzed:**	08/26/06	**Time:**	18:44
QC_Batch:	082606-MS3	**Can Dilution Factor:**	1.42		1
Air Volume:	0.5 ml	**Not Detected Flag:**	U		

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75-01-4	Vinyl chloride	5.4	28.4	122.0	14.1	75.0	322.1	
75-35-4	1,1-Dichloroethene	3.3	28.4	39.7	13.5	116.2	162.3	
156-60-5	trans-1,2-Dichloroethene	15.4	25.6	3,227.5	63.1	104.6	13,212.4	
156-59-2	cis-1,2-Dichloroethene	24.0	28.4	2,231.9	98.4	116.2	9,133.2	
79-01-6	Trichloroethene	2.3	28.4	1,924.7	12.8	157.1	10,647.4	
127-18-4	Tetrachloroethene	2.3	28.4	2.3	16.1	199.1	16.1	U

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.192	96	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV/V

Report File Name: 20637501.MS3
Printed on 8/28/2006

12269 East Vassar Drive, Aurora, CO 80014
720.535.5502, Fax 720.535.7555

DATA ASSESSMENT FORM

Project Title:	Vapor Migration Study
Project Manager:	D. Hambrick
Analysis/Method:	EPA Method TO-15
QC Level:	IV/V[1]
SDG:	206360
Matrix:	Air
No. of Samples:	6
No. of Reanalyses/Dilutions:	0
Date Reviewed:	September 24, 2006
Reviewer:	L. Calvin
Reference:	*MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 0), EPA Method TO-15* (1/99), and USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review* (2/94)
Samples Reviewed:	MV624, MV625, MV626, MV627, MV628, MV629

Data Validation Findings

	Findings	Qualifications
1. Sample Management	According to the case narrative for this SDG, the samples were received intact and in good condition, with acceptable canister pressures. The laboratory also provided canister QC certification records for the batches of canisters utilized. No problems were noted regarding sample handling and transport. The COC was signed and dated by appropriate field and laboratory personnel, and accounted for the samples and analyses presented in this SDG. The air samples were analyzed within 30 days of collection.	No qualifications were required.
3. Calibration	The initial calibration %RSDs and the continuing calibration %Ds were within the method QC limit of ≤30%.	No qualifications were required.

	Findings	Qualifications
4. Method Blanks 081506-MS1 081706-MS1	Two method blanks were analyzed with the samples in this SDG. The laboratory also supplied canister QC certification blanks for all canisters used in this SDG. No target compounds were detected in the method blanks or the canister QC certification blanks.	No qualifications were required.
5. LCS/LCSD 081506-MS1 081706-MS1	LCS/LCSD recoveries were within the laboratory QC limits of 70-130%, and the RPDs were within the QC limit of ≤30%.	No qualifications were required.
6. Surrogates	The surrogate was recovered within the laboratory QC limits of 70-130% for all samples.	No qualifications were required.
7. MS/MSD MV624	The MS/MSD recoveries were within laboratory QC limits of 70-130% and the RPDs were within the QC limit of ≤30%.	No qualifications were required.
8. Field QC FB: None ER: None FD: None	There were no field QC samples identified for this SDG.	No qualifications were required.
10. Other	The laboratory used the acceptance criteria of -50%/+100% of the internal standard area of the associated continuing calibration; however, for validation purposes, the reviewer applied the more stringent Method TO-15 criteria of ±40% of the mean initial calibration internal standard area to evaluate samples. All sample internal standard area recoveries were within the control limits. All of the samples in this SDG required analysis or reanalysis by full-scan method due to high concentrations of target compounds exceeding the calibration range of the SIM method, and all of the full-scan analyses were performed at lower volumes, or "dilutions." Only the acceptable dilutions and reanalyses were reported by the laboratory. MDLs and reporting limits were adjusted appropriately for dilution and full-scan analysis.	No qualifications were required.

	Findings	Qualifications
10. Other (continued)	The laboratory reported all nondetects at the MDL; however, at the professional discretion of the reviewer, those results were changed on the sample result summaries to nondetects at the reporting limit (for µg/m^3), rather than the MDL.	
	Results were reported by the laboratory in both ppbv and units of µg/m^3. The reviewer noted that the laboratory reported results to three decimal places, rather than to three significant figures.	Detects reported between the MDL and the reporting limit were qualified as estimated, "J."
	Isopropanol leak tests were performed on samples MV628 and MV629 to demonstrate efficiency of the sampling procedure. Isopropanol was detected in MV628.	Results for sample MV628 were qualified as estimated, "J," for detects and "UJ," for nondetects. Results for the remaining samples were rejected, "R."
Comments	None.	None.

[1] Level IV/V validation consists of cursory review of the summary forms and minimal review of the raw data as necessary. Based on the Level IV report it was determined by the reviewer that additional items required review. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed. Criteria not reviewed included instrument performance, analytical sequence, initial calibration, continuing calibration, compound identification, and compound quantification.

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Full Scan GC/MS
Analytical Method: TO-15

SDG: 206360
Laboratory Number: 01

File: 0636001B.D
Description: MV624
Can/Tube#: 519
Sam_Type: SA
QC_Batch: 081506-MS1
Air Volume: 10 ml

Date Sampled: 07/25/06 **Time:** 10:36
Date Received: 07/26/06
Date Extracted:
Date Analyzed: 08/15/06 **Time:** 17:42
Can Dilution Factor: 1.84 1
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag	Rev Qual	Qual Code
75-01-4	Vinyl chloride	8.6	93.8	8.6	22.8	247.7	22.8	U	R	*10
75-35-4	1,1-Dichloroethene	14.0	95.7	14.0	57.2	391.5	57.2	U		
156-60-5	trans-1,2-Dichloroethene	57.2	81.0	57.2	234.3	331.4	234.3	U		
156-59-2	cis-1,2-Dichloroethene	9.8	94.8	9.8	39.9	387.8	39.9	U		
79-01-6	Trichloroethene	12.0	94.8	293.6	66.2	524.2	1,624.0			
127-18-4	Tetrachloroethene	7.5	189.5	11.4	52.9	1,328.6	79.8	J		

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	10.000	9.750	98	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

LEVEL IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Full Scan GC/MS **SDG:** **206360**
Analytical Method: **TO-15** **Laboratory Number:** **02**

File:	0636002B.D	**Date Sampled:**	07/25/06	**Time:**	10:57
Description:	MV625	**Date Received:**	07/26/06		
Can/Tube#:	696	**Date Extracted:**			
Sam_Type:	SA	**Date Analyzed:**	08/15/06	**Time:**	18:27
QC_Batch:	081506-MS1	**Can Dilution Factor:**	2.18		1
Air Volume:	10 ml	**Not Detected Flag:**	U		

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag	Rev Qual	Qual Code
75-01-4	Vinyl chloride	10.2	111.2	10.2	27.0	293.4	27.0	U	R	*10
75-35-4	1,1-Dichloroethene	16.6	113.4	16.6	67.8	463.9	67.8	U		
156-60-5	trans-1,2-Dichloroethene	67.8	95.9	67.8	277.5	392.7	277.5	U		
156-59-2	cis-1,2-Dichloroethene	11.6	112.3	11.6	47.3	459.4	47.3	U		
79-01-6	Trichloroethene	14.2	112.3	1,292.8	78.4	621.1	7,152.0			
127-18-4	Tetrachloroethene	8.9	224.5	15.7	62.7	1,574.1	110.1	J		

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	10.000	10.044	100	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

LEVEL IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Full Scan GC/MS **SDG:** **206360**
Analytical Method: **TO-15** **Laboratory Number:** **03**

File:	0636003A.D	**Date Sampled:**	07/25/06	**Time:**	12:36
Description:	MV626	**Date Received:**	07/26/06		
Can/Tube#:	650	**Date Extracted:**			
Sam_Type:	SA	**Date Analyzed:**	08/15/06	**Time:**	16:58
QC_Batch:	081506-MS1	**Can Dilution Factor:**	1.45		0
Air Volume:	0.1 ml	**Not Detected Flag:**	U		

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag	Rev Qual	Qual Code
75-01-4	Vinyl chloride	682	7,395	682	1,799	19,518	1,799	U	R	*10
75-35-4	1,1-Dichloroethene	1,102	7,540	1,102	4,509	30,854	4,509	U		
156-60-5	trans-1,2-Dichloroethene	4,510	6,380	4,510	18,461	26,118	18,461	U		
156-59-2	cis-1,2-Dichloroethene	769	7,468	1,537	3,145	30,557	6,288	J		
79-01-6	Trichloroethene	943	7,468	47,917	5,214	41,311	265,079			
127-18-4	Tetrachloroethene	595	14,935	595	4,168	104,696	4,168	U		

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	10.000	9.944	99	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

LEVEL IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Full Scan GC/MS
Analytical Method: TO-15

SDG: 206360
Laboratory Number: 04

File: 0636004A.D
Description: MV627
Can/Tube#: 2961
Sam_Type: SA
QC_Batch: 081506-MS1
Air Volume: 0.05 ml

Date Sampled: 07/25/06 **Time:** 12:48
Date Received: 07/26/06
Date Extracted:
Date Analyzed: 08/15/06 **Time:** 20:01
Can Dilution Factor: 1.95 0
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag	Rev Qual	Qual Code
75-01-4	Vinyl chloride	1,833	19,890	1,833	4,838	52,497	4,838	U	R	*10
75-35-4	1,1-Dichloroethene	2,964	20,280	2,964	12,129	82,987	12,129	U		
156-60-5	trans-1,2-Dichloroethene	12,129	17,160	12,763	49,653	70,249	52,247	J		
156-59-2	cis-1,2-Dichloroethene	2,067	20,085	37,445	8,458	82,189	153,229			
79-01-6	Trichloroethene	2,535	20,085	575,722	14,024	111,112	3,184,949			
127-18-4	Tetrachloroethene	1,599	40,170	1,599	11,209	281,597	11,209	U		

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	10.000	9.765	98	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

LEVEL IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Full Scan GC/MS
Analytical Method: TO-15

SDG: 206360
Laboratory Number: 05

File: 0636005A.D
Description: MV628
Can/Tube#: 402
Sam_Type: SA
QC_Batch: 081506-MS1
Air Volume: 0.05 ml

Date Sampled: 07/25/06 **Time:** 14:55
Date Received: 07/26/06
Date Extracted:
Date Analyzed: 08/15/06 **Time:** 19:16
Can Dilution Factor: 1.75 0
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag	val qual	qual code
75-01-4	Vinyl chloride	1,645	17,850	1,645	4,342	47,113	4,342 47113	U	UJ	* *10
75-35-4	1,1-Dichloroethene	2,660	18,200	2,660	10,885	74,476	10,885 74476	U		
156-60-5	trans-1,2-Dichloroethene	10,885	15,400	10,885	44,560	63,044	44,560 63044	U		
156-59-2	cis-1,2-Dichloroethene	1,855	18,025	5,491	7,591	73,759	22,470	J	J	
79-01-6	Trichloroethene	2,275	18,025	126,900	12,586	99,716	702,023			
127-18-4	Tetrachloroethene	1,435	36,050	1,435	10,060	252,715	10,060 252715	U	UJ	*

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	10.000	9.594	96	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

NC 09.24.06
Level IV / IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Full Scan GC/MS — **SDG:** 206360
Analytical Method: TO-15 — **Laboratory Number:** 06

File:	0636006A.D	**Date Sampled:**	07/25/06	**Time:**	15:06
Description:	MV629	**Date Received:**	07/26/06		
Can/Tube#:	25	**Date Extracted:**			
Sam_Type:	SA	**Date Analyzed:**	08/17/06	**Time:**	20:11
QC_Batch:	081706-MS1	**Can Dilution Factor:**	1.81		0
Air Volume:	0.1 ml	**Not Detected Flag:**	U		

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag	
75-01-4	Vinyl chloride	851	9,231	851	2,245	24,364	~~2,245~~ 24364	U	U
75-35-4	1,1-Dichloroethene	1,376	9,412	1,376	5,629	38,514	~~5,629~~ 38,514	U	
156-60-5	trans-1,2-Dichloroethene	5,629	7,964	5,629	23,044	32,603	~~23,044~~ 32,603	U	
156-59-2	cis-1,2-Dichloroethene	959	9,322	5,166	3,926	38,144	21,141	J	J
79-01-6	Trichloroethene	1,177	9,322	116,732	6,509	51,567	645,771		
127-18-4	Tetrachloroethene	742	9,322	742	5,202	65,345	~~5,202~~ 65,345	U	U

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
	Toluene-d8	10.000	9.879	99	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

AC 09-24-06

Level IV/V

12269 East Vassar Drive, Aurora, CO 80014
720.535.5502, Fax 720.535.7555

DATA ASSESSMENT FORM

Project Title:	Vapor Migration Study
Project Manager:	D. Hambrick
Analysis/Method:	EPA Method TO-15
QC Level:	IV/V[1]
SDG:	206367
Matrix:	Air
No. of Samples:	11
No. of Reanalyses/Dilutions:	0
Date Reviewed:	September 24, 2006
Reviewer:	L. Calvin
Reference:	*MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 0), EPA Method TO-15* (1/99), and USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review* (2/94)
Samples Reviewed:	MV630, MV631, MV632, MV633, MV634, MV635, MV636, MV637, MV638, MV639, MV640

Data Validation Findings

	Findings	Qualifications
1. Sample Management	According to the case narrative for this SDG, the samples were received intact and in good condition, with acceptable canister pressures. The laboratory also provided canister QC certification records for the batches of canisters utilized. The COC was signed and dated by appropriate field and laboratory personnel, and accounted for the samples and analyses presented in this SDG. Although the COC indicated all samples were collected in Summa canisters, the sample result summaries for samples MV631, MV632, MV633, and MV634 indicated they were collected in Tedlar bags. The laboratory confirmed that the COC was correct and the sample result summaries were corrected by the reviewer. The air samples were analyzed within 30 days of collection.	No qualifications were required.

	Findings	Qualifications
3. Calibration	The initial calibration %RSDs and the continuing calibration %Ds were within the method QC limit of ≤30%.	No qualifications were required.
4. Method Blanks 081706-MS1 081806-MS3 082206-MS1 082506-MS3	Four method blanks were analyzed with the samples in this SDG. The laboratory also supplied canister QC certification blanks for all canisters used in this SDG. Trichloroethene was detected between the MDL and the reporting limit in method blank 081806-MS3; however, the detect for trichloroethene in associated sample MV635 exceeded five times the method blank concentration. No target compounds were detected in the remaining method blanks or the canister QC certification blanks.	No qualifications were required.
5. LCS/LCSD 081706-MS1 081806-MS3 082206-MS1 082506-MS3	Four LCS/LCSD pairs were analyzed with the samples in this SDG. All recoveries were within the laboratory QC limits of 70-130%, and the RPDs were within the QC limit of ≤30%.	No qualifications were required.
6. Surrogates	The surrogate was recovered within the laboratory QC limits of 70-130% for all samples.	No qualifications were required.
7. MS/MSD MV638	MS/MSD analyses were performed on sample MV638 in association with the samples in this SDG. All recoveries were within laboratory QC limits of 70-130% and the RPDs were within the QC limit of ≤30%.	No qualifications were required.
8. Field QC FB: None ER: MV635 FD: MV631/MV633	The equipment blank had detects between the MDL and the reporting limit for 1,1-dichloroethene and tetrachloroethene, and detects above the reporting limits for all remaining target compounds; however, target compound concentrations in all associated site samples exceeded five times the equipment blank concentrations. The field duplicate samples had common detects above the reporting limits for trans-1,2-dichloroethene, cis-1,2-dichloroethene, and trichloroethene; with RPDs of approximately 150%, 167%, and 110%, respectively. Vinyl chloride was detected below the reporting limit in MV631 and above the reporting limit in MV633.	No qualifications were required.

	Findings	Qualifications
8. Field QC (cont.)	Tetrachloroethene was detected between the MDL and the reporting limit in both samples.	
10. Other	The laboratory used the acceptance criteria of -50%/+100% of the internal standard area of the associated continuing calibration; however, for validation purposes, the reviewer applied the more stringent Method TO-15 criteria of ±40% of the mean initial calibration internal standard area to evaluate samples. The internal standard was within the control limits for samples MV636 and MV637, above the control limits for sample MV638, and below the limits for all remaining samples.	Detects in sample MV638 were qualified as estimated, "J," and all results were qualified as estimated, "J," for detects and "UJ," for nondetects in site samples MV630, MV631, MV632, MV633, MV634, MV639, and MV640. Equipment blank MV635 was not qualified.
	Samples MV636, MV637, and MV638 required analysis by full-scan method due to high concentrations of target compounds exceeding the calibration range of the SIM method, and all of the full-scan analyses were performed at lower volumes, or "dilutions." All remaining samples analyzed by SIM also required significant dilutions for target compounds. Only the acceptable dilutions and reanalyses were reported by the laboratory. MDLs and reporting limits were adjusted appropriately for dilution and/or full-scan analysis.	
	Results were reported by the laboratory in both ppbv and units of $\mu g/m^3$. The reviewer noted that the laboratory reported results to three decimal places, rather than to three significant figures.	Detects reported between the MDL and the reporting limit were qualified as estimated, "J."
	The laboratory reported all nondetects at the MDL; however, at the professional discretion of the reviewer, those results were changed on the sample result summaries to nondetects at the reporting limit (for $\mu g/m^3$), rather than the MDL.	
	Isopropanol leak tests were performed on all of the site samples in this SDG to demonstrate efficiency of the sampling procedure. Isopropanol was detected in samples MV630, MV635, MV636, and MV639.	Results for samples MV630, MV636, and MV639 were qualified as estimated, "J," for detects and "UJ," for nondetects. MV635 was identified as a field QC sample and as such was not qualified for the isopropanol detect.

	Findings	Qualifications
Comments	None.	None.

[1] Level IV/V validation consists of cursory review of the summary forms and minimal review of the raw data as necessary. Based on the Level IV report it was determined by the reviewer that additional items required review. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed. Criteria not reviewed included instrument performance, analytical sequence, initial calibration, continuing calibration, compound identification, and compound quantification.

	Findings	Qualifications
10. Other	The laboratory used the acceptance criteria of -50%/+100% of the internal standard area of the associated continuing calibration; however, for validation purposes, the reviewer applied the more stringent Method TO-15 criteria of ±40% of the mean initial calibration internal standard area to evaluate samples. The internal standard was within the control limits for samples MV636 and MV637, above the control limits for sample MV638, and below the limits for all remaining samples.	Detects in sample MV638 were qualified as estimated, "J," and all results were qualified as estimated, "J," for detects and "UJ," for nondetects in site samples MV630, MV631, MV632, MV633, MV634, MV639, and MV640. Equipment blank MV635 was not qualified.
	Samples MV636, MV637, and MV638 required analysis by full-scan method due to high concentrations of target compounds exceeding the calibration range of the SIM method, and all of the full-scan analyses were performed at lower volumes, or "dilutions." All remaining samples analyzed by SIM also required significant diluations for target compounds. Only the acceptable dilutions and reanalyses were reported by the laboratory. MDLs and reporting limits were adjusted appropriately for dilution and/or full-scan analysis.	
	Results were reported by the laboratory in both ppbv and units of $\mu g/m^3$. The reviewer noted that the laboratory reported results to three decimal places, rather than to three significant figures.	Detects reported between the MDL and the reporting limit were qualified as estimated, "J."
	The laboratory reported all nondetects at the MDL; however, at the professional discretion of the reviewer, those results were changed on the sample result summaries to nondetects at the reporting limit (for $\mu g/m^3$), rather than the MDL.	
	Isopropanol leak tests were performed on all of the site samples in this SDG to demonstrate efficiency of the sampling procedure. Isopropanol was detected in samples MV630, MV635, MV636, and MV639.	Results for samples MV630, MV636, and MV639 were qualified as estimated, "J," for detects and "UJ," for nondetects. As MV635 was identified as a field QC sample, no qualifications were required.
Comments	None.	None.

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206367
Laboratory Number: 01

File: 0636701A.D
Description: MV630
Can/Tube#: 692
Sam_Type: SA
QC_Batch: 082506-MS3
Air Volume: 0.5 ml

Date Sampled: 07/26/06 **Time:** 8:07
Date Received: 07/27/06
Date Extracted:
Date Analyzed: 08/25/06 **Time:** 14:32
Can Dilution Factor: 2.33 2
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag	Val qual	qual code
75-01-4	Vinyl chloride	8.79	46.60	35.37	23.20	122.99	93.36	J	J	I *10
75-35-4	1,1-Dichloroethene	5.41	46.60	5.41	22.13	190.69	~~22.13~~ 190.69	U	UJ	$
156-60-5	trans-1,2-Dichloroethene	25.29	41.94	270.52	103.53	171.69	1,107.43		J	
156-59-2	cis-1,2-Dichloroethene	39.45	46.60	961.23	161.45	190.69	3,933.42			
79-01-6	Trichloroethene	3.81	46.60	3,103.92	21.07	257.80	17,171.17			
127-18-4	Tetrachloroethene	3.76	46.60	3.76	26.35	326.67	~~26.35~~ 326.67	U	UJ	V$

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.206	103	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09.24.06
Level IV/V

Report File Name: 20636701.MS3
Printed on 8/26/2006

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

SDG: **206367**
Laboratory Number: **02**

File: 0636702A.D
Description: MV631
Can/Tube#: ~~TBAG~~ 735
Sam_Type: SA
QC_Batch: 082506-MS3
Air Volume: 0.1 ml

Date Sampled: 07/26/06 **Time:** 9:05
Date Received: 07/27/06
Date Extracted:
Date Analyzed: 08/25/06 **Time:** 16:03
Can Dilution Factor: 167.00 0
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag	raw qual	qual code
75-01-4	Vinyl chloride	3,150	16,700	11,419	8,315	44,077	30,139	J	J	I
75-35-4	1,1-Dichloroethene	1,938	16,700	1,938	7,930	68,337	~~7,930~~ 68337	U	UJ	$
156-60-5	trans-1,2-Dichloroethene	9,063	15,030	37,844	37,103	61,529	154,925		J	
156-59-2	cis-1,2-Dichloroethene	14,139	16,700	67,565	57,858	68,337	276,480			
79-01-6	Trichloroethene	1,365	16,700	1,009,953	7,552	92,386	5,587,156			
127-18-4	Tetrachloroethene	1,347	16,700	2,043	9,445	117,069	14,320	J		

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.207	104	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

NC 09.24.06

Level IV/V

Report File Name: 20636702.MS3
Printed on 8/26/2006

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

File: 0636703A.D
Description: MV632
Can/Tube#: ~~TBAG~~ 351
Sam_Type: SA
QC_Batch: 082506-MS3
Air Volume: 0.1 ml

SDG: 206367
Laboratory Number: 03

Date Sampled: 07/26/06 **Time:** 10:00
Date Received: 07/27/06
Date Extracted:
Date Analyzed: 08/25/06 **Time:** 16:41
Can Dilution Factor: 258.00 0
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75-01-4	Vinyl chloride	4,867	25,800	177,194	12,846	68,095	467,677	
75-35-4	1,1-Dichloroethene	2,994	25,800	2,994	12,251	105,575	~~12,251~~ 105575	U UJ
156-60-5	trans-1,2-Dichloroethene	14,002	23,220	273,232	57,321	95,057	1,118,545	J
156-59-2	cis-1,2-Dichloroethene	21,844	25,800	832,200	89,386	105,575	3,405,413	
79-01-6	Trichloroethene	2,109	25,800	3,602,952	11,666	142,728	19,931,872	
127-18-4	Tetrachloroethene	2,081	25,800	2,822	14,591	180,861	19,781	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.212	106	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09-24-06
Level III/IV

Report File Name: 20636703.MS3
Printed on 8/26/2006

Environmental Analytical Service
Page 1 of 1

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206367
Laboratory Number: 04

File: 0636704A.D
Description: MV633
Can/Tube#: ~~TBAG~~ 323A
Sam_Type: SA
QC_Batch: 082506-MS3
Air Volume: 0.1 ml

Date Sampled: 07/26/06 **Time:** 10:00
Date Received: 07/27/06
Date Extracted:
Date Analyzed: 08/25/06 **Time:** 17:18
Can Dilution Factor: 207.00 0
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag	Final val qual	qual code
75-01-4	Vinyl chloride	3,905	20,700	112,928	10,306	54,635	298,057		J	I
75-35-4	1,1-Dichloroethene	2,402	20,700	2,402	9,829	84,706	~~9,829~~ 84706	U	UJ	¢
156-60-5	trans-1,2-Dichloroethene	11,234	18,630	263,494	45,990	76,267	1,078,677		J	
156-59-2	cis-1,2-Dichloroethene	17,526	20,700	747,989	71,717	84,706	3,060,816			
79-01-6	Trichloroethene	1,692	20,700	3,424,928	9,360	114,514	18,947,023			
127-18-4	Tetrachloroethene	1,670	20,700	2,080	11,707	145,110	14,584	J	↓	↓

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.207	103	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09.24.06
Level IV / V

Report File Name: 20636704.MS3
Printed on 8/26/2006

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206367
Laboratory Number: 05

File: 0636705B.D
Description: MV634
Can/Tube#: ~~TBAG~~ 6161
Sam_Type: SA
QC_Batch: 082506-MS3
Air Volume: 2 ml

Date Sampled: 07/26/06 **Time:** 10:31
Date Received: 07/27/06
Date Extracted:
Date Analyzed: 08/25/06 **Time:** 19:14
Can Dilution Factor: 150.00 1
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag	Qual Code
75-01-4	Vinyl chloride	141.5	750.0	402.1	373.4	1,979.5	1,061.2	J	J I
75-35-4	1,1-Dichloroethene	87.0	750.0	87.0	356.1	3,069.0	~~356.1~~ 3069.0	U	UJ $
156-60-5	trans-1,2-Dichloroethene	407.0	675.0	3,160.1	1,666.3	2,763.3	12,936.6		J
156-59-2	cis-1,2-Dichloroethene	635.0	750.0	7,267.2	2,598.4	3,069.0	29,737.6		
79-01-6	Trichloroethene	61.3	750.0	13,409.7	339.1	4,149.1	74,183.5		
127-18-4	Tetrachloroethene	60.5	750.0	60.5	424.2	5,257.6	~~424.2~~ 5257.6	U	UJ V $

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.186	93	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

DC 09-24-06
Level IV/V

Report File Name: 20636705.MS3
Printed on 8/26/2006

ANALYTICAL REPORT

BR

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

SDG: **206367**
Laboratory Number: **06**

File: 0636706C.D
Description: MV635
Can/Tube#: 667
Sam_Type: SA
QC_Batch: 081806-MS3
Air Volume: 250 ml

Date Sampled: 07/26/06 **Time:** 11:50
Date Received: 07/27/06
Date Extracted:
Date Analyzed: 08/18/06 **Time:** 20:22
Can Dilution Factor: 1.74 3
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75-01-4	Vinyl chloride	0.013	0.070	0.251	0.035	0.184	0.663	
75-35-4	1,1-Dichloroethene	0.008	0.070	0.043	0.033	0.285	0.175	J J
156-60-5	trans-1,2-Dichloroethene	0.038	0.063	0.038	0.155	0.256	0.155 0.256 U U ϕ
156-59-2	cis-1,2-Dichloroethene	0.059	0.070	0.194	0.241	0.285	0.793	
79-01-6	Trichloroethene	0.006	0.070	1.011	0.031	0.385	5.594	
127-18-4	Tetrachloroethene	0.006	0.070	0.032	0.039	0.488	0.222	J J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.188	94	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09-24-06
Level IV/V

Report File Name: 20636706.MS3
Printed on 8/22/2006

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Full Scan GC/MS
Analytical Method: TO-15

SDG: 206367
Laboratory Number: 07

File:	0636707A.D	**Date Sampled:**	07/26/06 **Time:** 11:29
Description:	MV636	**Date Received:**	07/27/06
Can/Tube#:	160	**Date Extracted:**	
Sam_Type:	SA	**Date Analyzed:**	08/17/06 **Time:** 18:42
QC_Batch:	081706-MS1	**Can Dilution Factor:**	2.25 0
Air Volume:	0.5 ml	**Not Detected Flag:**	U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75-01-4	Vinyl chloride	212	2,295	212	558	6,057	558	U
75-35-4	1,1-Dichloroethene	342	2,340	342	1,399	9,575	1,399	U
156-60-5	trans-1,2-Dichloroethene	1,400	1,980	1,400	5,729	8,106	5,729	U
156-59-2	cis-1,2-Dichloroethene	239	2,318	1,850	976	9,483	7,569	J
79-01-6	Trichloroethene	293	2,318	31,494	1,618	12,821	174,226	
127-18-4	Tetrachloroethene	185	2,318	185	1,293	16,246	1,293	U

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	10.000	9.800	98	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

20636707.MS1
Printed on 8/18/2006

Environmental Analytical Service
Page 1 of 1

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Full Scan GC/MS
Analytical Method: TO-15

File: 0636708A.D
Description: MV637
Can/Tube#: 515
Sam_Type: SA
QC_Batch: 081706-MS1
Air Volume: 0.05 ml

SDG: 206367
Laboratory Number: 08

Date Sampled: 07/26/06 **Time:** 14:03
Date Received: 07/27/06
Date Extracted:
Date Analyzed: 08/17/06 **Time:** 19:27
Can Dilution Factor: 1.73 0
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75-01-4	Vinyl chloride	1,626	17,646	1,626	4,292	46,574	~~4,292~~ 46,574	U
75-35-4	1,1-Dichloroethene	2,630	17,992	2,630	10,760	73,624	~~10,760~~ 73,624	U
156-60-5	trans-1,2-Dichloroethene	10,761	15,224	10,761	44,051	62,323	~~44,051~~ 62,323	U
156-59-2	cis-1,2-Dichloroethene	1,834	17,819	2,059	7,504	72,916	8,428	J
79-01-6	Trichloroethene	2,249	17,819	49,157	12,442	98,576	271,942	
127-18-4	Tetrachloroethene	1,419	17,819	1,419	9,945	124,914	~~9,945~~ 124,914	U

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
	Toluene-d8	10.000	9.765	98	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09.24.06
Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Full Scan GC/MS
Analytical Method: TO-15

SDG: 206367
Laboratory Number: 09

File: 0636709A.D
Description: MV638
Can/Tube#: 775
Sam_Type: SA
QC_Batch: 082206-MS1
Air Volume: 517 ml

Date Sampled: 07/26/06 **Time:** 14:58
Date Received: 07/27/06
Date Extracted:
Date Analyzed: 08/22/06 **Time:** 21:11
Can Dilution Factor: 1.71 2
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag	new qual	qual code
75-01-4	Vinyl chloride	0.16	1.69	0.16	0.41	4.45	~~0.41~~ 4.45	U	U	D
75-35-4	1,1-Dichloroethene	0.25	1.72	0.25	1.03	7.04	~~1.03~~ 7.04	U	U	
156-60-5	trans-1,2-Dichloroethene	1.03	1.46	1.03	4.21	5.96	~~4.21~~ 5.96	U	U	
156-59-2	cis-1,2-Dichloroethene	0.18	1.70	2.51	0.72	6.97	10.26		J	I
79-01-6	Trichloroethene	0.21	1.70	55.96	1.19	9.42	309.59		J	
127-18-4	Tetrachloroethene	0.14	3.41	0.93	0.95	23.88	6.50	J	J	

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	10.000	10.040	100	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

09.22.05
Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

SDG: **206367**
Laboratory Number: **10**

File: 0636710A.D
Description: MV639
Can/Tube#: 707
Sam_Type: SA
QC_Batch: 082506-MS3
Air Volume: 20 ml

Date Sampled: 07/26/06 **Time:** 15:22
Date Received: 07/27/06
Date Extracted:
Date Analyzed: 08/25/06 **Time:** 13:54
Can Dilution Factor: 1.58 2
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75-01-4	Vinyl chloride	0.15	0.79	0.40	0.39	2.09	1.06	J
75-35-4	1,1-Dichloroethene	0.09	0.79	0.09	0.38	3.23	0.38 3.23	U
156-60-5	trans-1,2-Dichloroethene	0.43	0.71	0.43	1.76	2.91	1.76 2.91	U
156-59-2	cis-1,2-Dichloroethene	0.67	0.79	0.67	2.74	3.23	2.74 3.23	U
79-01-6	Trichloroethene	0.06	0.79	11.17	0.36	4.37	61.79	
127-18-4	Tetrachloroethene	0.06	0.79	0.18	0.45	5.54	1.29	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.204	102	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

UNC 09.27.06
Level III/V

Report File Name: 20636710.MS3
Printed on 8/26/2006

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206367
Laboratory Number: 11

File: 0636711A.D
Description: MV640
Can/Tube#: 817
Sam_Type: SA
QC_Batch: 082506-MS3
Air Volume: 0.5 ml

Date Sampled: 07/26/06 **Time:** 15:30
Date Received: 07/27/06
Date Extracted:
Date Analyzed: 08/25/06 **Time:** 15:13
Can Dilution Factor: 2.65 2
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75-01-4	Vinyl chloride	10.00	53.00	10.00	26.39	139.89	26.39 [139.89]	U
75-35-4	1,1-Dichloroethene	6.15	53.00	6.15	25.17	216.88	25.17 [216.88]	U
156-60-5	trans-1,2-Dichloroethene	28.76	47.70	180.47	117.75	195.27	738.79	
156-59-2	cis-1,2-Dichloroethene	44.87	53.00	649.40	183.62	216.88	2,657.38	
79-01-6	Trichloroethene	4.33	53.00	7,531.44	23.97	293.20	41,664.65	
127-18-4	Tetrachloroethene	4.28	53.00	10.25	29.97	371.54	71.87	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.206	103	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09.24.06
Level IV/V

Report File Name: 20636711.MS3
Printed on 8/26/2006

Environmental Analytical Service
Page 1 of 1

12269 East Vassar Drive, Aurora, CO 80014
720.535.5502, Fax 720.535.7555

DATA ASSESSMENT FORM

Project Title:	Vapor Migration Study
Project Manager:	D. Hambrick
Analysis/Method:	EPA Method TO-15
QC Level:	IV/V[1]
SDG:	206353
Matrix:	Air
No. of Samples:	16
No. of Reanalyses/Dilutions:	0
Date Reviewed:	September 23, 2006
Reviewer:	K. Shadowlight
Reference:	*MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 0), EPA Method TO-15* (1/99), and USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review* (2/94)
Samples Reviewed:	MV601, MV602, MV603, MV604, MV605, MV606, MV607, MV601B, MV608, MV609, MV610, MV611, MV612, MV613, MV614, MV615

Data Validation Findings

	Findings	Qualifications
1. Sample Management	According to the case narrative for this SDG, the samples were received intact and in good condition, with acceptable canister pressures. The laboratory also provided canister QC certification records for the batches of canisters utilized. No problems were noted regarding sample handling and transport. The COC was signed and dated by appropriate field and laboratory personnel, and accounted for the samples and analyses presented in this SDG. The air samples were analyzed within 30 days of collection.	No qualifications were required.

	Findings	Qualifications
3. Calibration	The %RSDs for the initial calibrations and the %Ds for the continuing calibrations were all within the control limit of ≤30%.	No qualifications were required.
4. Method Blanks 080606-MS3 080706-MS3 081506-MS3 081706-MS1 081706-MS3	There were five method blanks analyzed in association with the samples in this SDG. The laboratory also supplied canister QC certification blanks for all canisters used in this SDG. No target compounds were detected in the canister QC certification blanks. Method blanks from QC batches 080606-MS3, 080706-MS3 had detects between the reporting limit and the MDL for trichloroethene. Method blank 081706-MS3 had target compound detects for trichloroethene and tetrachloroethene between the MDL and the reporting limit. All blanks had one or more associated samples with detects at concentrations less than five times the method blank concentrations.	No qualifications were required. Results for trichloroethene reported between the MDL and reporting limit in samples MV605, MV606, MV608, MV610, MV612, MV613, MV614, and MV615 were qualified as nondetects, "U," at the reporting limit.
5. LCS/LCSD 080606-MS3 080706-MS3 081506-MS3 081706-MS1 081706-MS3	Five LCS/LCSD pairs were analyzed with the samples in this SDG. Spiked target compound trichloroethene was recovered above the laboratory QC limits of 70-130% in the LCSD only of LCS/LCSD pair 080706-MS3 and tetrachlorethene was recovered above QC limits in the LCS only of LCS/LCSD pair 081506-MS3. All remaining recoveries were within the QC limits, and all RPDs were within the QC limit of ≤30%.	No qualifications were required.
6. Surrogates	The surrogate was recovered below control limits in sample MV609. All remaining surrogate recoveries were within the method-established control limits of 70-130%.	The detect for trichlorethene in sample MV609 was qualified as estimated "J."
7. MS/MSD MV601 MV610	The recoveries were within laboratory QC limits of 70-130% and all RPDs were ≤30%.	No qualifications were required.
8. Field QC FB: None ER: MV654 (SDG 206359) FD: None	The equipment blank had a detect between the MDL and the reporting limit for trichloroethene; however, the reportable concentrations of trichloroethene in the associated site samples exceeded five times the concentration reported in the equipment blank. No other target compounds were	No qualifications were required.

	Findings	Qualifications
	reported in the equipment blank.	
10. Other	The laboratory used the acceptance criteria of -50%/+100% of the internal standard area of the associated continuing calibration; however, for validation purposes, the reviewer applied the more stringent Method TO-15 criteria of ±40% of the mean initial calibration internal standard area. All internal standard area recoveries were checked from the raw data. The internal standard area was below control limit but >25% of the applicable initial calibration mean area for sample MV612. The internal standard area for sample MV611 was above the control limit. Sample MV612 required lower volume analysis, or "dilution" due to either matrix interference or high concentrations of target compounds. Sample MV611 required reanalysis by full-scan due to high concentrations of target compounds exceeding the calibration range of the SIM method. Only the acceptable dilutions and reanalyses were reported by the laboratory. MDLs and reporting limits were adjusted appropriately for dilution and/or full-scan analysis. Results were reported by the laboratory in both ppbv and units of µg/m^3, and in addition, a flux measurement was provided for each result. The laboratory reported all nondetects at the MDL; however, at the professional discretion of the reviewer, those results were changed on the sample result summaries to nondetects at the reporting limit (for µg/m^3), rather than the MDL.	The nondetect result for trichloroethene (see section 2.4), in sample MV612 was qualified as estimated, "UJ." The detect in sample MV611 was qualified as estimated, "J." Any detects between the MDL and the reporting limit were qualified as estimated, "J."
Comments	None.	None.

[1] Level IV/V validation consists of cursory review of the summary forms and minimal review of the raw data as necessary. Based on the Level IV report it was determined by the reviewer that additional items required review. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed. Criteria not reviewed included instrument performance, analytical sequence, initial calibration, continuing calibration, compound identification, and compound quantification.

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206353**
Analytical Method: TO-15 SIM **Laboratory Number: 01**

File: 0635301A.D
Description: MV601
Can/Tube#: 670
Sam_Type: SA
QC_Batch: 081506-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/15/06 **Time:** 18:43
Can Dilution Factor: 1.40 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Qual Code	Flag
75-01-4	Vinyl chloride	0.005	0.005	0.014	0.074	0.014 0.074	0.0005	U	*	U
75-35-4	1,1-Dichloroethene	0.003	0.003	0.013	0.115	0.013 0.115	0.0005	↓	↓	U
156-60-5	trans-1,2-Dichloroethene	0.015	0.015	0.062	0.103	0.062 0.103	0.0024			U
156-59-2	cis-1,2-Dichloroethene	0.024	0.024	0.097	0.115	0.097 0.115	0.0037			U
79-01-6	Trichloroethene	0.002	0.005	0.013	0.155	0.027	0.0010	J		J
127-18-4	Tetrachloroethene	0.002	0.013	0.016	0.196	0.093	0.0036	J		J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.215	108	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level
LS 9/23/06 IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206353
Laboratory Number: 02

File: 0635302A.D
Description: MV602
Can/Tube#: 675
Sam_Type: SA
QC_Batch: 081506-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/15/06 **Time:** 19:26
Can Dilution Factor: 2.16 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Rev Qual code	Flag
75-01-4	Vinyl chloride	0.008	0.008	0.022	0.114	0.022 0.114	0.0008	U	$	U
75-35-4	1,1-Dichloroethene	0.005	0.005	0.021	0.177	0.021 0.177	0.0008	↓	↓	U
156-60-5	trans-1,2-Dichloroethene	0.023	0.023	0.096	0.159	0.096 0.159	0.0037			U
156-59-2	cis-1,2-Dichloroethene	0.037	0.037	0.150	0.177	0.150 0.177	0.0058			U
79-01-6	Trichloroethene	0.004	0.005	0.020	0.239	0.028	0.0011	J		J
127-18-4	Tetrachloroethene	0.003	0.005	0.024	0.303	0.038	0.0015	J		J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.197	99	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV/V

KS 9/23/06

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

SDG: **206353**
Laboratory Number: **03**

File: 0635303A.D
Description: MV603
Can/Tube#: 652
Sam_Type: SA
QC_Batch: 081506-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/15/06 **Time:** 20:07
Can Dilution Factor: 2.01 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Qual code	Flag
75-01-4	Vinyl chloride	0.008	0.008	0.020	0.106	0.020 0.106	0.0008	U	$	U
75-35-4	1,1-Dichloroethene	0.005	0.005	0.019	0.165	0.019 0.165	0.0007	↓	↓	U
156-60-5	trans-1,2-Dichloroethene	0.022	0.022	0.089	0.148	0.089 0.148	0.0034			U
156-59-2	cis-1,2-Dichloroethene	0.034	0.034	0.139	0.165	0.139 0.165	0.0054			U
79-01-6	Trichloroethene	0.003	0.005	0.018	0.222	0.030	0.0012	J		J
127-18-4	Tetrachloroethene	0.003	0.013	0.023	0.282	0.089	0.0034	J		J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.215	108	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV
KS 9/23/06

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206353**
Analytical Method: TO-15 SIM **Laboratory Number: 04**

File: 0635304A.D
Description: MV604
Can/Tube#: 600
Sam_Type: SA
QC_Batch: 081506-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/15/06 **Time:** 20:52
Can Dilution Factor: 1.91 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Qual	Flag
75-01-4	Vinyl chloride	0.007	0.007	0.019	0.101	0.019	0.0007	J	J
75-35-4	1,1-Dichloroethene	0.004	0.004	0.018	0.156	0.018	0.0007	U	U
156-60-5	trans-1,2-Dichloroethene	0.021	0.021	0.085	0.141	0.085	0.0033	↓	U
156-59-2	cis-1,2-Dichloroethene	0.032	0.032	0.132	0.156	0.132	0.0051	↓	U
79-01-6	Trichloroethene	0.003	0.012	0.017	0.211	0.066	0.0025	J	J
127-18-4	Tetrachloroethene	0.003	0.009	0.022	0.268	0.065	0.0025	J	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.221	111	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV/V
KS 9/27/06

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206353**
Analytical Method: TO-15 SIM **Laboratory Number: 05**

File:	0635305A.D	**Date Sampled:**	07/19/06	**Time:**	
Description:	MV605	**Date Received:**	07/21/06		
Can/Tube#:	729	**Date Extracted:**			
Sam_Type:	SA	**Date Analyzed:**	08/17/06	**Time:**	15:04
QC_Batch:	081706-MS3	**Can Dilution Factor:**	1.94		3
Air Volume:	500 ml	**Flux Factor:**		0.0385	0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Raw Qual	Code	Final Flag
75-01-4	Vinyl chloride	0.007	0.007	0.019	0.102	0.019	0.0007	U	$	U
75-35-4	1,1-Dichloroethene	0.005	0.005	0.018	0.159	0.018	0.0007			U
156-60-5	trans-1,2-Dichloroethene	0.021	0.021	0.086	0.143	0.086	0.0033			U
156-59-2	cis-1,2-Dichloroethene	0.033	0.033	0.134	0.159	0.134	0.0052			U
79-01-6	Trichloroethene	0.003	0.019	0.018	0.215	0.105	0.0040	U	B, $	J
127-18-4	Tetrachloroethene	0.003	0.011	0.022	0.272	0.075	0.0029	J		J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.202	101	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

KS 9/23/06
Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206353**
Analytical Method: TO-15 SIM **Laboratory Number: 06**

File: 0635306A.D
Description: MV606
Can/Tube#: 193
Sam_Type: SA
QC_Batch: 081706-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/17/06 **Time:** 15:43
Can Dilution Factor: 1.73 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Lab Qual	Flag
75-01-4	Vinyl chloride	0.007	0.007	0.017	0.091	0.017 0.091	0.0007	U	$	U
75-35-4	1,1-Dichloroethene	0.004	0.004	0.016	0.142	0.016 0.142	0.0006	↓	↓	U
156-60-5	trans-1,2-Dichloroethene	0.019	0.019	0.077	0.127	0.077 0.127	0.0030			U
156-59-2	cis-1,2-Dichloroethene	0.029	0.029	0.120	0.142	0.120 0.142	0.0046			U
79-01-6	Trichloroethene	0.003	0.017	0.016	0.191	0.095 0.191	0.0037	U	B, $	J
127-18-4	Tetrachloroethene	0.003	0.012	0.020	0.243	0.085	0.0033	J		J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.207	103	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV/V

LCs 9/23/06

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206353**
Analytical Method: TO-15 SIM **Laboratory Number: 07**

File: 0635307A.D
Description: MV607
Can/Tube#: 511
Sam_Type: SA
QC_Batch: 081706-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/17/06 **Time:** 16:25
Can Dilution Factor: 1.74 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Qual code	Flag
75-01-4	Vinyl chloride	0.007	0.007	0.017	0.092	0.017 a093	0.0007	U	$	U
75-35-4	1,1-Dichloroethene	0.004	0.004	0.017	0.142	0.017 0.142	0.0007	↓	↓	U
156-60-5	trans-1,2-Dichloroethene	0.019	0.019	0.077	0.128	0.077 0.128	0.0030	↓	↓	U
156-59-2	cis-1,2-Dichloroethene	0.029	0.029	0.121	0.142	0.121 a142	0.0047	↓	↓	U
79-01-6	Trichloroethene	0.003	0.023	0.016	0.193	0.125	0.0048	J		J
127-18-4	Tetrachloroethene	0.003	0.012	0.020	0.244	0.081	0.0031	J		J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.214	107	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

ks 9/29/06
Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

SDG: **206353**
Laboratory Number: **08**

File: 0635308A.D
Description: MV601B
Can/Tube#: 517
Sam_Type: SA
QC_Batch: 081706-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/17/06 **Time:** 17:08
Can Dilution Factor: 5.29 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Raw Qual	Qual Code	Flag
75-01-4	Vinyl chloride	0.020	0.020	0.053	0.279	0.053 0.279	0.0020	U	$	U
75-35-4	1,1-Dichloroethene	0.012	0.012	0.050	0.433	0.050 0.433	0.0019	↓	↓	U
156-60-5	trans-1,2-Dichloroethene	0.057	0.057	0.235	0.390	0.235 0.390	0.0090			U
156-59-2	cis-1,2-Dichloroethene	0.090	0.090	0.367	0.433	0.367 0.433	0.0141			U
79-01-6	Trichloroethene	0.009	0.023	0.048	0.585	0.129	0.0050	J		J
127-18-4	Tetrachloroethene	0.009	0.022	0.060	0.742	0.156	0.0060	J		J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.186	93	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

9/23/06
Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206353
Laboratory Number: 09

File: 0635309A.D
Description: MV608
Can/Tube#: 874
Sam_Type: SA
QC_Batch: 080606-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/06/06 **Time:** 14:52
Can Dilution Factor: 1.36 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Qual	Qual code	Flag
79-01-6	Trichloroethene	0.002	0.015	0.012	0.150	0.085 0.150	0.0033	U	B, $	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.177	89	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

8.23.06

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206353**
Analytical Method: TO-15 SIM **Laboratory Number: 10**

File: 0635310A.D
Description: MV609
Can/Tube#: 714
Sam_Type: SA
QC_Batch: 080606-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/06/06 **Time:** 15:36
Can Dilution Factor: 1.40 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Qual code	Flag
79-01-6	Trichloroethene	0.002	0.027	0.013	0.155	0.149	0.0057	J	S	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.086	43	70-130	*

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

8.9.06
Level IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

SDG: **206353**
Laboratory Number: **11**

File: 0635311A.D
Description: MV610
Can/Tube#: 510
Sam_Type: SA
QC_Batch: 080606-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/06/06 **Time:** 16:20
Can Dilution Factor: 1.37 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Qual code	Flag
79-01-6	Trichloroethene	0.002	0.005	0.012	0.152	0.026 0.152	0.0010	U	B, 5	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.185	93	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

KS 9.23.06

Level IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Full Scan GC/MS
Analytical Method: TO-15

SDG: 206353
Laboratory Number: 12

File:	0635312A.D	**Date Sampled:**	07/19/06	**Time:**	
Description:	MV611	**Date Received:**	07/21/06		
Can/Tube#:	362	**Date Extracted:**			
Sam_Type:	SA	**Date Analyzed:**	08/17/06	**Time:**	17:58
QC_Batch:	081706-MS1	**Can Dilution Factor:**	1.42		2
Air Volume:	531 ml	**Flux Factor:**		0.0385	0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Qual code	Flag
79-01-6	Trichloroethene	0.17	20.95	0.96	7.62	115.89	4.462	J	I	

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
	Toluene-d8	10.000	10.268	103	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206353**
Analytical Method: TO-15 SIM **Laboratory Number: 13**

File: 0635313A.D
Description: MV612
Can/Tube#: 697
Sam_Type: SA
QC_Batch: 080706-MS3
Air Volume: 200 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/07/06 **Time:** 17:21
Can Dilution Factor: 1.38 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Qual code	Flag
79-01-6	Trichloroethene	0.006	0.031	0.031	0.382	0.172 0.382	0.0066	UJ	B, $	IJ

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.180	90	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

ls 9.24.06
Level IV V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206353
Laboratory Number: 14

File: 0635314A.D
Description: MV613
Can/Tube#: 784
Sam_Type: SA
QC_Batch: 080606-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/06/06 **Time:** 18:31
Can Dilution Factor: 1.40 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Qual code	Flag
79-01-6	Trichloroethene	0.002	0.018	0.013	0.155	0.102 0.155	0.0039	U	B, $	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.180	90	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

KS 9.23.06
Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206353**
Analytical Method: TO-15 SIM **Laboratory Number: 15**

File: 0635315A.D
Description: MV614
Can/Tube#: 525
Sam_Type: SA
QC_Batch: 080606-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/06/06 **Time:** 19:14
Can Dilution Factor: 1.39 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Raw Qual	Qual Code	Flag
79-01-6	Trichloroethene	0.002	0.004	0.013	0.154	0.022 0.154	0.0008	U	B, $	J

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
	Toluene-d8	0.200	0.194	97	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

9.23.06
Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206353**
Analytical Method: TO-15 SIM **Laboratory Number: 16**

File:	0635316A.D	**Date Sampled:**	07/19/06	**Time:**	
Description:	MV615	**Date Received:**	07/21/06		
Can/Tube#:	172	**Date Extracted:**			
Sam_Type:	SA	**Date Analyzed:**	08/07/06	**Time:**	16:39
QC_Batch:	080706-MS3	**Can Dilution Factor:**	1.41		3
Air Volume:	500 ml	**Flux Factor:**		0.0385	0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Raw Qual	Qual lock	Flag
79-01-6	Trichloroethene	0.002	0.013	0.013	0.156	0.070 0.156	0.0027	U	B, $	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.166	83	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

KS 9.23.06
Level IV/V

12269 East Vassar Drive, Aurora, CO 80014
720.535.5502, Fax 720.535.7555

DATA ASSESSMENT FORM

Project Title:	Vapor Migration Study
Project Manager:	D. Hambrick
Analysis/Method:	EPA Method TO-15
QC Level:	IV/V[1]
SDG:	206353
Matrix:	Air
No. of Samples:	16
No. of Reanalyses/Dilutions:	0
Date Reviewed:	September 23, 2006
Reviewer:	K. Shadowlight
Reference:	*MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 0), EPA Method TO-15* (1/99), and USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review* (2/94)
Samples Reviewed:	MV601, MV602, MV603, MV604, MV605, MV606, MV607, MV601B, MV608, MV609, MV610, MV611, MV612, MV613, MV614, MV615

Data Validation Findings

	Findings	Qualifications
1. Sample Management	According to the case narrative for this SDG, the samples were received intact and in good condition, with acceptable canister pressures. The laboratory also provided canister QC certification records for the batches of canisters utilized. No problems were noted regarding sample handling and transport. The COC was signed and dated by appropriate field and laboratory personnel, and accounted for the samples and analyses presented in this SDG. The air samples were analyzed within 30 days of collection.	No qualifications were required.

	Findings	Qualifications
3. Calibration	The %RSDs for the initial calibrations and the %Ds for the continuing calibrations were all within the control limit of ≤30%.	No qualifications were required.
4. Method Blanks 080606-MS3 080706-MS3 081506-MS3 081706-MS1 081706-MS3	There were five method blanks analyzed in association with the samples in this SDG. The laboratory also supplied canister QC certification blanks for all canisters used in this SDG. No target compounds were detected in the canister QC certification blanks. Method blanks from QC batches 080606-MS3, 080706-MS3 had detects between the reporting limit and the MDL for trichloroethene. Method blank 081706-MS3 had target compound detects for trichloroethene and tetrachloroethene between the MDL and the reporting limit. All blanks had one or more associated samples with detects at concentrations less than five times the method blank concentrations.	No qualifications were required. Results for trichloroethene reported between the MDL and reporting limit in samples MV605, MV606, MV608, MV610, MV612, MV613, MV614, and MV615 were qualified as nondetects, "U," at the reporting limit.
5. LCS/LCSD 080606-MS3 080706-MS3 081506-MS3 081706-MS1 081706-MS3	Five LCS/LCSD pairs were analyzed with the samples in this SDG. Spiked target compound trichloroethene was recovered above the laboratory QC limits of 70-130% in the LCSD only of LCS/LCSD pair 080706-MS3 and tetrachlorethene was recovered above QC limits in the LCS only of LCS/LCSD pair 081506-MS3. All remaining recoveries were within the QC limits, and all RPDs were within the QC limit of ≤30%.	No qualifications were required.
6. Surrogates	The surrogate was recovered below control limits in sample MV609. All remaining surrogate recoveries were within the method-established control limits of 70-130%.	The detect for trichlorethene in sample MV609 was qualified as estimated "J."
7. MS/MSD MV601 MV610	The recoveries were within laboratory QC limits of 70-130% and all RPDs were ≤30%.	No qualifications were required.
8. Field QC FB: None ER: MV654 (SDG 206359) FD: None	The equipment blank had a detect between the MDL and the reporting limit for trichloroethene; however, the reportable concentrations of trichloroethene in the associated site samples exceeded five times the concentration reported in the equipment blank. No other target compounds were	No qualifications were required.

	Findings	Qualifications
	reported in the equipment blank.	
10. Other	The laboratory used the acceptance criteria of -50%/+100% of the internal standard area of the associated continuing calibration; however, for validation purposes, the reviewer applied the more stringent Method TO-15 criteria of ±40% of the mean initial calibration internal standard area. All internal standard area recoveries were checked from the raw data. The internal standard area was below control limit but >25% of the applicable initial calibration mean area for sample MV612. The internal standard area for sample MV611 was above the control limit. Sample MV612 required lower volume analysis, or "dilution" due to either matrix interference or high concentrations of target compounds. Sample MV611 required reanalysis by full-scan due to high concentrations of target compounds exceeding the calibration range of the SIM method. Only the acceptable dilutions and reanalyses were reported by the laboratory. MDLs and reporting limits were adjusted appropriately for dilution and/or full-scan analysis. Results were reported by the laboratory in both ppbv and units of µg/m^3, and in addition, a flux measurement was provided for each result. The laboratory reported all nondetects at the MDL; however, at the professional discretion of the reviewer, those results were changed on the sample result summaries to nondetects at the reporting limit (for µg/m^3), rather than the MDL.	The nondetect result for trichloroethene (see section 2.4), in sample MV612 was qualified as estimated, "UJ." The detect in sample MV611 was qualified as estimated, "J." Any detects between the MDL and the reporting limit were qualified as estimated, "J."
Comments	None.	None.

[1] Level IV/V validation consists of cursory review of the summary forms and minimal review of the raw data as necessary. Based on the Level IV report it was determined by the reviewer that additional items required review. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed. Criteria not reviewed included instrument performance, analytical sequence, initial calibration, continuing calibration, compound identification, and compound quantification.

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206353**
Analytical Method: TO-15 SIM **Laboratory Number: 01**

File: 0635301A.D
Description: MV601
Can/Tube#: 670
Sam_Type: SA
QC_Batch: 081506-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/15/06 **Time:** 18:43
Can Dilution Factor: 1.40 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Qual Code	Flag
75-01-4	Vinyl chloride	0.005	0.005	0.014	0.074	0.014 0.074	0.0005	U	*	U
75-35-4	1,1-Dichloroethene	0.003	0.003	0.013	0.115	0.013 0.115	0.0005	↓	↓	U
156-60-5	trans-1,2-Dichloroethene	0.015	0.015	0.062	0.103	0.062 0.103	0.0024			U
156-59-2	cis-1,2-Dichloroethene	0.024	0.024	0.097	0.115	0.097 0.115	0.0037			U
79-01-6	Trichloroethene	0.002	0.005	0.013	0.155	0.027	0.0010	J		J
127-18-4	Tetrachloroethene	0.002	0.013	0.016	0.196	0.093	0.0036	J		J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.215	108	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level
LS 9/23/06 IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206353
Laboratory Number: 02

File: 0635302A.D
Description: MV602
Can/Tube#: 675
Sam_Type: SA
QC_Batch: 081506-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/15/06 **Time:** 19:26
Can Dilution Factor: 2.16 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Rev Qual code	Flag
75-01-4	Vinyl chloride	0.008	0.008	0.022	0.114	0.022 0.114	0.0008	U	$	U
75-35-4	1,1-Dichloroethene	0.005	0.005	0.021	0.177	0.021 0.177	0.0008	↓	↓	U
156-60-5	trans-1,2-Dichloroethene	0.023	0.023	0.096	0.159	0.096 0.159	0.0037			U
156-59-2	cis-1,2-Dichloroethene	0.037	0.037	0.150	0.177	0.150 0.177	0.0058			U
79-01-6	Trichloroethene	0.004	0.005	0.020	0.239	0.028	0.0011	J		J
127-18-4	Tetrachloroethene	0.003	0.005	0.024	0.303	0.038	0.0015	J		J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.197	99	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV/V

KS 9/23/06

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

SDG: **206353**
Laboratory Number: **03**

File: 0635303A.D
Description: MV603
Can/Tube#: 652
Sam_Type: SA
QC_Batch: 081506-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/15/06 **Time:** 20:07
Can Dilution Factor: 2.01 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Qual code	Flag
75-01-4	Vinyl chloride	0.008	0.008	0.020	0.106	0.020 0.106	0.0008	U	$	U
75-35-4	1,1-Dichloroethene	0.005	0.005	0.019	0.165	0.019 0.165	0.0007	↓	↓	U
156-60-5	trans-1,2-Dichloroethene	0.022	0.022	0.089	0.148	0.089 0.148	0.0034			U
156-59-2	cis-1,2-Dichloroethene	0.034	0.034	0.139	0.165	0.139 0.165	0.0054			U
79-01-6	Trichloroethene	0.003	0.005	0.018	0.222	0.030	0.0012	J		J
127-18-4	Tetrachloroethene	0.003	0.013	0.023	0.282	0.089	0.0034	J		J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.215	108	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV
KS 9/23/06

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206353**
Analytical Method: TO-15 SIM **Laboratory Number: 04**

File: 0635304A.D
Description: MV604
Can/Tube#: 600
Sam_Type: SA
QC_Batch: 081506-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/15/06 **Time:** 20:52
Can Dilution Factor: 1.91 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Qual	Flag
75-01-4	Vinyl chloride	0.007	0.007	0.019	0.101	0.019	0.0007	J	J
75-35-4	1,1-Dichloroethene	0.004	0.004	0.018	0.156	0.018	0.0007	U	U
156-60-5	trans-1,2-Dichloroethene	0.021	0.021	0.085	0.141	0.085	0.0033	↓	U
156-59-2	cis-1,2-Dichloroethene	0.032	0.032	0.132	0.156	0.132	0.0051	↓	U
79-01-6	Trichloroethene	0.003	0.012	0.017	0.211	0.066	0.0025	J	J
127-18-4	Tetrachloroethene	0.003	0.009	0.022	0.268	0.065	0.0025	J	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.221	111	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV/V
KS 9/27/06

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206353**
Analytical Method: TO-15 SIM **Laboratory Number: 05**

File:	0635305A.D	**Date Sampled:**	07/19/06	**Time:**	
Description:	MV605	**Date Received:**	07/21/06		
Can/Tube#:	729	**Date Extracted:**			
Sam_Type:	SA	**Date Analyzed:**	08/17/06	**Time:**	15:04
QC_Batch:	081706-MS3	**Can Dilution Factor:**	1.94		3
Air Volume:	500 ml	**Flux Factor:**		0.0385	0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Raw Qual	Code	Final Flag
75-01-4	Vinyl chloride	0.007	0.007	0.019	0.102	0.019	0.0007	U	$	U
75-35-4	1,1-Dichloroethene	0.005	0.005	0.018	0.159	0.018	0.0007			U
156-60-5	trans-1,2-Dichloroethene	0.021	0.021	0.086	0.143	0.086	0.0033			U
156-59-2	cis-1,2-Dichloroethene	0.033	0.033	0.134	0.159	0.134	0.0052			U
79-01-6	Trichloroethene	0.003	0.019	0.018	0.215	0.105	0.0040	U	B, $	J
127-18-4	Tetrachloroethene	0.003	0.011	0.022	0.272	0.075	0.0029	J		J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.202	101	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

KS 9/23/06
Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206353**
Analytical Method: TO-15 SIM **Laboratory Number: 06**

File: 0635306A.D
Description: MV606
Can/Tube#: 193
Sam_Type: SA
QC_Batch: 081706-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/17/06 **Time:** 15:43
Can Dilution Factor: 1.73 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Lab Qual	Flag
75-01-4	Vinyl chloride	0.007	0.007	0.017	0.091	0.017 0.091	0.0007	U	$	U
75-35-4	1,1-Dichloroethene	0.004	0.004	0.016	0.142	0.016 0.142	0.0006	↓	↓	U
156-60-5	trans-1,2-Dichloroethene	0.019	0.019	0.077	0.127	0.077 0.127	0.0030			U
156-59-2	cis-1,2-Dichloroethene	0.029	0.029	0.120	0.142	0.120 0.142	0.0046			U
79-01-6	Trichloroethene	0.003	0.017	0.016	0.191	0.095 0.191	0.0037	U	B, $	J
127-18-4	Tetrachloroethene	0.003	0.012	0.020	0.243	0.085	0.0033	J		J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.207	103	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV/V

LCs 9/23/06

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206353**
Analytical Method: TO-15 SIM **Laboratory Number: 07**

File: 0635307A.D
Description: MV607
Can/Tube#: 511
Sam_Type: SA
QC_Batch: 081706-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/17/06 **Time:** 16:25
Can Dilution Factor: 1.74 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Qual code	Flag
75-01-4	Vinyl chloride	0.007	0.007	0.017	0.092	0.017 a093	0.0007	U	$	U
75-35-4	1,1-Dichloroethene	0.004	0.004	0.017	0.142	0.017 0.142	0.0007	↓	↓	U
156-60-5	trans-1,2-Dichloroethene	0.019	0.019	0.077	0.128	0.077 0.128	0.0030	↓	↓	U
156-59-2	cis-1,2-Dichloroethene	0.029	0.029	0.121	0.142	0.121 a142	0.0047	↓	↓	U
79-01-6	Trichloroethene	0.003	0.023	0.016	0.193	0.125	0.0048	J		J
127-18-4	Tetrachloroethene	0.003	0.012	0.020	0.244	0.081	0.0031	J		J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.214	107	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

ks 9/29/06
Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

SDG: **206353**
Laboratory Number: **08**

File: 0635308A.D
Description: MV601B
Can/Tube#: 517
Sam_Type: SA
QC_Batch: 081706-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/17/06 **Time:** 17:08
Can Dilution Factor: 5.29 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Raw Qual	Qual Code	Flag
75-01-4	Vinyl chloride	0.020	0.020	0.053	0.279	0.053 0.279	0.0020	U	$	U
75-35-4	1,1-Dichloroethene	0.012	0.012	0.050	0.433	0.050 0.433	0.0019	↓	↓	U
156-60-5	trans-1,2-Dichloroethene	0.057	0.057	0.235	0.390	0.235 0.390	0.0090			U
156-59-2	cis-1,2-Dichloroethene	0.090	0.090	0.367	0.433	0.367 0.433	0.0141			U
79-01-6	Trichloroethene	0.009	0.023	0.048	0.585	0.129	0.0050	J		J
127-18-4	Tetrachloroethene	0.009	0.022	0.060	0.742	0.156	0.0060	J		J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.186	93	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

9/23/06
Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206353
Laboratory Number: 09

File: 0635309A.D
Description: MV608
Can/Tube#: 874
Sam_Type: SA
QC_Batch: 080606-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/06/06 **Time:** 14:52
Can Dilution Factor: 1.36 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Qual	Qual code	Flag
79-01-6	Trichloroethene	0.002	0.015	0.012	0.150	0.085 0.150	0.0033	U	B, $	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.177	89	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

8.23.06

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206353**
Analytical Method: TO-15 SIM **Laboratory Number: 10**

File: 0635310A.D
Description: MV609
Can/Tube#: 714
Sam_Type: SA
QC_Batch: 080606-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/06/06 **Time:** 15:36
Can Dilution Factor: 1.40 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Qual code	Flag
79-01-6	Trichloroethene	0.002	0.027	0.013	0.155	0.149	0.0057	J	S	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.086	43	70-130	*

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

8.9.06
Level IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

SDG: **206353**
Laboratory Number: **11**

File: 0635311A.D
Description: MV610
Can/Tube#: 510
Sam_Type: SA
QC_Batch: 080606-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/06/06 **Time:** 16:20
Can Dilution Factor: 1.37 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Qual code	Flag
79-01-6	Trichloroethene	0.002	0.005	0.012	0.152	0.026 0.152	0.0010	U	B, 5	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.185	93	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

KS 9.23.06

Level IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Full Scan GC/MS
Analytical Method: TO-15

SDG: 206353
Laboratory Number: 12

File:	0635312A.D	**Date Sampled:**	07/19/06	**Time:**	
Description:	MV611	**Date Received:**	07/21/06		
Can/Tube#:	362	**Date Extracted:**			
Sam_Type:	SA	**Date Analyzed:**	08/17/06	**Time:**	17:58
QC_Batch:	081706-MS1	**Can Dilution Factor:**	1.42		2
Air Volume:	531 ml	**Flux Factor:**		0.0385	0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Qual code	Flag
79-01-6	Trichloroethene	0.17	20.95	0.96	7.62	115.89	4.462	J	I	

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
	Toluene-d8	10.000	10.268	103	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206353**
Analytical Method: TO-15 SIM **Laboratory Number: 13**

File: 0635313A.D
Description: MV612
Can/Tube#: 697
Sam_Type: SA
QC_Batch: 080706-MS3
Air Volume: 200 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/07/06 **Time:** 17:21
Can Dilution Factor: 1.38 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Qual code	Flag
79-01-6	Trichloroethene	0.006	0.031	0.031	0.382	0.172 0.382	0.0066	UJ	B, $	IJ

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.180	90	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

ls 9.24.06
Level IV V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206353
Laboratory Number: 14

File: 0635314A.D
Description: MV613
Can/Tube#: 784
Sam_Type: SA
QC_Batch: 080606-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/06/06 **Time:** 18:31
Can Dilution Factor: 1.40 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Qual code	Flag
79-01-6	Trichloroethene	0.002	0.018	0.013	0.155	0.102 0.155	0.0039	U	B, $	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.180	90	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

KS 9.23.06
Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206353**
Analytical Method: TO-15 SIM **Laboratory Number: 15**

File: 0635315A.D
Description: MV614
Can/Tube#: 525
Sam_Type: SA
QC_Batch: 080606-MS3
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:**
Date Received: 07/21/06
Date Extracted:
Date Analyzed: 08/06/06 **Time:** 19:14
Can Dilution Factor: 1.39 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Raw Qual	Qual Code	Flag
79-01-6	Trichloroethene	0.002	0.004	0.013	0.154	0.022 0.154	0.0008	U	B, $	J

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
	Toluene-d8	0.200	0.194	97	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

9.23.06
Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206353**
Analytical Method: TO-15 SIM **Laboratory Number: 16**

File:	0635316A.D	**Date Sampled:**	07/19/06	**Time:**	
Description:	MV615	**Date Received:**	07/21/06		
Can/Tube#:	172	**Date Extracted:**			
Sam_Type:	SA	**Date Analyzed:**	08/07/06	**Time:**	16:39
QC_Batch:	080706-MS3	**Can Dilution Factor:**	1.41		3
Air Volume:	500 ml	**Flux Factor:**		0.0385	0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Raw Qual	Qual lock	Flag
79-01-6	Trichloroethene	0.002	0.013	0.013	0.156	0.070 0.156	0.0027	U	B, $	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.166	83	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

KS 9.23.06
Level IV/V

12269 East Vassar Drive, Aurora, CO 80014
720.535.5502, Fax 720.535.7555

DATA ASSESSMENT FORM

Project Title:	Vapor Migration Study
Project Manager:	D. Hambrick
Analysis/Method:	EPA Method TO-15
QC Level:	IV/V[1]
SDG:	206373
Matrix:	Air
No. of Samples:	10
No. of Reanalyses/Dilutions:	0
Date Reviewed:	September 24, 2006
Reviewer:	L. Calvin
Reference:	*MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 0), EPA Method TO-15* (1/99), and USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review* (2/94)
Samples Reviewed:	MV641, MV642, MV643, MV644, MV645, MV646, MV647, MV648, MV649, MV650

Data Validation Findings

	Findings	Qualifications
1. Sample Management	According to the case narrative for this SDG, the samples were received intact and in good condition, with acceptable canister pressures. The laboratory also provided canister QC certification records for the batches of canisters utilized. The COC was signed and dated by appropriate field and laboratory personnel, and accounted for the samples and analyses presented in this SDG. Although the COC indicated all samples were collected in Summa canisters, the sample result summary for sample MV650 indicated the sample was collected in a Tedlar bag. The laboratory confirmed that the COC was correct. The sample result summary was corrected by the reviewer. The air samples were analyzed within 30 days of collection.	No qualifications were required.

	Findings	Qualifications
3. Calibration	The initial calibration %RSDs and the continuing calibration %Ds were within the method QC limit of ≤30%, with the exception of a %D >30% for vinyl chloride in the continuing calibration analyzed 08/22/06.	As the only sample associated with the %D outlier was identified as a field QC sample, no qualifications were required.
4. Method Blanks 081706-MS1 082206-MS3 082506-MS3 082606-MS3	Four method blanks were analyzed with the samples in this SDG. The laboratory also supplied canister QC certification blanks for all canisters used in this SDG. Trichloroethene was detected between the MDL and the reporting limit in method blank 082206-MS3; however, the detect for trichloroethene in associated sample MV647 exceeded five times the method blank concentration. No target compounds were detected in the remaining method blanks or the canister QC certification blanks.	No qualifications were required.
5. LCS/LCSD 081706-MS1 082206-MS3 082506-MS3 082606-MS3	In the LCS only of 082206-MS3, trichloroethene was recovered below the QC limits but ≥10%, and in the LCSD only, vinyl chloride was recovered above the QC limits. All remaining LCS/LCSD recoveries were within the laboratory QC limits of 70-130%, and all RPDs were within the QC limit of ≤30%.	No qualifications were required.
6. Surrogates	The surrogate was recovered within the laboratory QC limits of 70-130% for all samples.	No qualifications were required.
7. MS/MSD MV642	In the MSD only, trichloroethene was recovered above the QC limits. The remaining MS/MSD recoveries were within laboratory QC limits of 70-130% and all RPDs were within the QC limit of ≤30%.	No qualifications were required.
8. Field QC FB: None ER: MV647 FD: MV641/MV643	The equipment blank had detects between the MDL and the reporting limit for vinyl chloride and 1,1-dichloroethene, and detects above the reporting limits for all remaining target compounds. Most target compound concentrations in the site samples exceeded five times the equipment blank concentrations; however, the exceptions were qualified as noted.	The following detects were qualified as estimated, "J:" 1,1-dichloroethene and trichloroethene in MV641, tetrachloroethene in MV642, MV643, and MV644, trichloroethene and tetrachloroethene in sample MV645, trans- and cis-1,2-dichloroethene and tetrachloroethene in sample MV646, and trichloroethene in sample MV648.

	Findings	Qualifications
8. Field QC (cont.) FB: None ER: MV647 FD: MV641/MV643	The field duplicate samples had a common detect above the reporting limit for trichloroethene; with an RPD of approximately 193%. Vinyl chloride and tetrachloroethene were detected below the reporting limits and trans- and cis-1,2-dichloroethene were detected above the reporting limits in MV643 but were not detected in MV641.	No qualifications were required.
10. Other	The laboratory used the acceptance criteria of -50%/+100% of the internal standard area of the associated continuing calibration; however, for validation purposes, the reviewer applied the more stringent Method TO-15 criteria of ±40% of the mean initial calibration internal standard area to evaluate samples. The internal standard was within the control limits for samples MV647 and MV649, and below the control limits for all remaining samples. Sample MV649 required analysis by full-scan method due to high concentrations of target compounds exceeding the calibration range of the SIM method, and the full-scan analysis was performed at a lower volume, or "dilution." All remaining samples analyzed by SIM also required significant diluations for target compounds. Only the acceptable dilutions and reanalyses were reported by the laboratory. MDLs and reporting limits were adjusted appropriately for dilution and/or full-scan analysis. The laboratory reported all nondetects at the MDL; however, at the professional discretion of the reviewer, those results were changed on the sample result summaries to nondetects at the reporting limit (for $\mu g/m^3$), rather than the MDL. Results were reported by the laboratory in both ppbv and units of $\mu g/m^3$. The reviewer noted that the laboratory reported results to three decimal places, rather than to three significant figures.	All results were qualified as estimated, "J," for detects and "UJ," for nondetects in samples MV641, MV642, MV643, MV644, MV645, MV646, MV648, and MV650. Detects reported between the MDL and the reporting limit were qualified as estimated, "J."

	Findings	Qualifications
10. Other (cont.)	Isopropanol leak tests were performed on all of the site samples in this SDG to demonstrate efficiency of the sampling procedure. Isopropanol was detected in samples MV641, MV645, and MV646.	Results for samples MV641, MV645, and MV646 were qualified as estimated, "J," for detects and "UJ," for nondetects.
Comments	None.	None.

[1] Level IV/V validation consists of cursory review of the summary forms and minimal review of the raw data as necessary. Based on the Level IV report it was determined by the reviewer that additional items required review. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed. Criteria not reviewed included instrument performance, analytical sequence, initial calibration, continuing calibration, compound identification, and compound quantification.

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

File: 0637301B.D
Description: MV641
Can/Tube#: 643
Sam_Type: SA
QC_Batch: 082606-MS3
Air Volume: 5 ml

SDG: 206373
Laboratory Number: 01

Date Sampled: 07/27/06 **Time:** 8:03
Date Received: 07/28/06
Date Extracted:
Date Analyzed: 08/26/06 **Time:** 20:02
Can Dilution Factor: 1.92 2
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag	Qual Code
75-01-4	Vinyl chloride	0.72	3.84	0.72	1.91	10.14	~~1.91~~ 10.14	U	UJ
75-35-4	1,1-Dichloroethene	0.45	3.84	2.37	1.82	15.71	9.72	J	J
156-60-5	trans-1,2-Dichloroethene	2.08	3.46	2.08	8.53	14.15	~~8.53~~ 14.15	U	UJ
156-59-2	cis-1,2-Dichloroethene	3.25	3.84	3.25	13.30	15.71	~~13.30~~ 15.71	U	↓
79-01-6	Trichloroethene	0.31	3.84	38.14	1.74	21.24	210.97	J	F
127-18-4	Tetrachloroethene	0.31	3.84	0.31	2.17	26.92	~~2.17~~ 26.92	U	UJ

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.208	104	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09.24.06
Level IV

Report File Name: 20637301.MS3
Printed on 8/28/2006

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

File: 0637302A.D
Description: MV642
Can/Tube#: 770
Sam_Type: SA
QC_Batch: 082506-MS3
Air Volume: 1 ml

SDG: 206373
Laboratory Number: 02

Date Sampled: 07/27/06 **Time:** 8:14
Date Received: 07/28/06
Date Extracted:
Date Analyzed: 08/25/06 **Time:** 18:37
Can Dilution Factor: 2.18 2
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75-01-4	Vinyl chloride	4.11	21.80	4.11	10.85	57.54	~~10.85~~ 57.54	U
75-35-4	1,1-Dichloroethene	2.53	21.80	246.75	10.35	89.21	1,009.72	
156-60-5	trans-1,2-Dichloroethene	11.83	19.62	38.49	48.43	80.32	157.55	
156-59-2	cis-1,2-Dichloroethene	18.46	21.80	166.50	75.53	89.21	681.34	
79-01-6	Trichloroethene	1.78	21.80	2,115.58	9.86	120.60	11,703.57	
127-18-4	Tetrachloroethene	1.76	21.80	3.75	12.33	152.82	26.28	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.213	107	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

DAC 09.24.06
Level IV/V

Report File Name: 20637302.MS3
Printed on 8/26/2006

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206373
Laboratory Number: 03

File: 0637303A.D
Description: MV643
Can/Tube#: 533
Sam_Type: SA
QC_Batch: 082506-MS3
Air Volume: 1 ml

Date Sampled: 07/27/06 **Time:** 8:14
Date Received: 07/28/06
Date Extracted:
Date Analyzed: 08/25/06 **Time:** 20:31
Can Dilution Factor: 2.24 2
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75-01-4	Vinyl chloride	4.23	22.40	10.03	11.15	59.12	26.47	J
75-35-4	1,1-Dichloroethene	2.60	22.40	276.20	10.64	91.66	1,130.25	
156-60-5	trans-1,2-Dichloroethene	12.16	20.16	26.69	49.77	82.53	109.26	
156-59-2	cis-1,2-Dichloroethene	18.97	22.40	188.67	77.61	91.66	772.06	
79-01-6	Trichloroethene	1.83	22.40	2,226.16	10.13	123.92	12,315.35	
127-18-4	Tetrachloroethene	1.81	22.40	5.34	12.67	157.03	37.47	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.208	104	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09-24-06
Level III/IV

Report File Name: 20637303.MS3
Printed on 8/26/2006

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206373
Laboratory Number: 04

File: 0637304A.D
Description: MV644
Can/Tube#: 183
Sam_Type: SA
QC_Batch: 082506-MS3
Air Volume: 1 ml

Date Sampled: 07/27/06 **Time:** 10:50
Date Received: 07/28/06
Date Extracted:
Date Analyzed: 08/25/06 **Time:** 21:13
Can Dilution Factor: 1.69 2
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75-01-4	Vinyl chloride	3.19	16.90	3.23	8.41	44.61	8.53	J
75-35-4	1,1-Dichloroethene	1.96	16.90	1.96	8.02	69.16	~~8.02~~ 69.14	U
156-60-5	trans-1,2-Dichloroethene	9.17	15.21	14.04	37.55	62.27	57.48	J
156-59-2	cis-1,2-Dichloroethene	14.31	16.90	109.35	58.55	69.16	447.45	
79-01-6	Trichloroethene	1.38	16.90	1,324.15	7.64	93.49	7,325.31	
127-18-4	Tetrachloroethene	1.36	16.90	2.66	9.56	118.47	18.62	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.228	114	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

AC 09.24.06
Level IV/V

Report File Name: 20637304.MS3
Printed on 8/26/2006

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206373
Laboratory Number: 05

File: 0637305A.D
Description: MV645
Can/Tube#: 621
Sam_Type: SA
QC_Batch: 082606-MS3
Air Volume: 10 ml

Date Sampled: 07/27/06 **Time:** 10:59
Date Received: 07/28/06
Date Extracted:
Date Analyzed: 08/26/06 **Time:** 13:25
Can Dilution Factor: 1.55 2
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75-01-4	Vinyl chloride	0.29	1.55	0.29	0.77	4.09	0.77 4.09	U UJ
75-35-4	1,1-Dichloroethene	0.18	1.55	0.18	0.74	6.34	0.74 6.34	U
156-60-5	trans-1,2-Dichloroethene	0.84	1.40	0.84	3.44	5.71	3.44 5.71	U
156-59-2	cis-1,2-Dichloroethene	1.31	1.55	1.31	5.37	6.34	5.37 6.34	U
79-01-6	Trichloroethene	0.13	1.55	22.23	0.70	8.57	122.96	J
127-18-4	Tetrachloroethene	0.13	1.55	0.42	0.88	10.87	2.92	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.207	104	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09.24.06
Level IV / V

Report File Name: 20637305.MS3
Printed on 8/28/2006

Environmental Analytical Service
Page 1 of 1

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206373
Laboratory Number: 06

File: 0637306A.D
Description: MV646
Can/Tube#: 657
Sam_Type: SA
QC_Batch: 082606-MS3
Air Volume: 10 ml

Date Sampled: 07/27/06 **Time:** 12:23
Date Received: 07/28/06
Date Extracted:
Date Analyzed: 08/26/06 **Time:** 14:10
Can Dilution Factor: 1.63 2
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75-01-4	Vinyl chloride	0.31	1.63	0.31	0.81	4.30	0.81 4.30	U UJ
75-35-4	1,1-Dichloroethene	0.19	1.63	0.19	0.77	6.67	0.77 6.67	U J
156-60-5	trans-1,2-Dichloroethene	0.88	1.47	3.64	3.62	6.01	14.88	
156-59-2	cis-1,2-Dichloroethene	1.38	1.63	11.97	5.65	6.67	48.98	
79-01-6	Trichloroethene	0.13	1.63	176.19	0.74	9.02	974.72	
127-18-4	Tetrachloroethene	0.13	1.63	0.42	0.92	11.43	2.94	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.211	105	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09.24.06
Level IV/V

Report File Name: 20637306.MS3
Printed on 8/28/2006

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

ER

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

SDG: **206373**
Laboratory Number: **07**

File: 0637307A.D
Description: MV647
Can/Tube#: 524
Sam_Type: SA
QC_Batch: 082206-MS3
Air Volume: 10 ml

Date Sampled: 07/27/06 **Time:** 10:58
Date Received: 07/28/06
Date Extracted:
Date Analyzed: 08/22/06 **Time:** 15:32
Can Dilution Factor: 1.35 3
Not Detected Flag: U

rev qual / qual code

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75-01-4	Vinyl chloride	0.255	1.350	0.433	0.672	3.563	1.144	J
75-35-4	1,1-Dichloroethene	0.157	1.350	0.953	0.641	5.524	3.901	J
156-60-5	trans-1,2-Dichloroethene	0.733	1.215	2.397	2.999	4.974	9.815	
156-59-2	cis-1,2-Dichloroethene	1.143	1.350	5.902	4.677	5.524	24.152	
79-01-6	Trichloroethene	0.110	1.350	21.208	0.610	7.468	117.325	
127-18-4	Tetrachloroethene	0.109	1.350	3.061	0.763	9.464	21.456	

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.260	130	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09.24.06
Level III/IV

Report File Name: 20637307.MS3
Printed on 8/23/2006

Environmental Analytical Service
Page 1 of 1

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

SDG: **206373**
Laboratory Number: **08**

File: 0637308B.D
Description: MV648
Can/Tube#: 407
Sam_Type: SA
QC_Batch: 082606-MS3
Air Volume: 5 ml

Date Sampled: 07/27/06 **Time:** 13:49
Date Received: 07/28/06
Date Extracted:
Date Analyzed: 08/26/06 **Time:** 19:22
Can Dilution Factor: 1.71 2
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75-01-4	Vinyl chloride	0.65	3.42	0.65	1.70	9.03	~~1.70~~ 9.03	U
75-35-4	1,1-Dichloroethene	0.40	3.42	0.40	1.62	13.99	~~1.62~~ 13.99	U
156-60-5	trans-1,2-Dichloroethene	1.86	3.08	1.86	7.60	12.60	~~7.60~~ 12.60	U
156-59-2	cis-1,2-Dichloroethene	2.90	3.42	2.90	11.85	13.99	~~11.85~~ 13.99	U
79-01-6	Trichloroethene	0.28	3.42	99.80	1.55	18.92	552.08	
127-18-4	Tetrachloroethene	0.28	3.42	0.28	1.93	23.97	~~1.93~~ 23.97	U

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.204	102	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09.24.06
Level IV / V

Report File Name: 20637308.MS3
Printed on 8/28/2006

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Full Scan GC/MS
Analytical Method: TO-15

SDG: 206373
Laboratory Number: 09

File: 0637309A.D
Description: MV649
Can/Tube#: 731
Sam_Type: SA
QC_Batch: 081706-MS1
Air Volume: 0.05 ml

Date Sampled: 07/27/06 **Time:** 13:58
Date Received: 07/28/06
Date Extracted:
Date Analyzed: 08/17/06 **Time:** 21:44
Can Dilution Factor: 1.61 0
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag	new qual	qual code
75-01-4	Vinyl chloride	1,513	16,422	1,513	3,994	43,344	~~3,994~~ 43344	U	U	5
75-35-4	1,1-Dichloroethene	2,447	16,744	2,447	10,014	68,517	~~10,014~~ 68517	U		
156-60-5	trans-1,2-Dichloroethene	10,014	14,168	10,014	40,996	58,000	~~40,996~~ 58000	U		
156-59-2	cis-1,2-Dichloroethene	1,707	16,583	1,707	6,984	67,859	~~6,984~~ 67859	U		
79-01-6	Trichloroethene	2,093	16,583	262,976	11,579	91,739	1,454,810			
127-18-4	Tetrachloroethene	1,320	16,583	1,320	9,255	116,249	~~9,255~~ 116249	U	U	5

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	10.000	9.890	99	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09-24-06
Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

SDG: 206373
Laboratory Number: 10

File: 0637310B.D
Description: MV650
Can/Tube#: ~~TBAG~~ 618
Sam_Type: SA
QC_Batch: 082606-MS3
Air Volume: 0.5 ml

Date Sampled: 07/27/06 **Time:** 15:22
Date Received: 07/28/06
Date Extracted:
Date Analyzed: 08/26/06 **Time:** 20:41
Can Dilution Factor: 161.00 0
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75-01-4	Vinyl chloride	607	3,220	607	1,603	8,499	~~1,603~~ 8499	U
75-35-4	1,1-Dichloroethene	374	3,220	374	1,529	13,176	~~1,529~~ 13176	U
156-60-5	trans-1,2-Dichloroethene	1,748	2,898	1,748	7,154	11,864	~~7,154~~ 11864	U
156-59-2	cis-1,2-Dichloroethene	2,726	3,220	2,726	11,156	13,176	~~11,156~~ 13176	U
79-01-6	Trichloroethene	263	3,220	155,518	1,456	17,813	860,340	J
127-18-4	Tetrachloroethene	260	3,220	260	1,821	22,573	1,821 22573	U

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.202	101	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09.24.06
Level III / IV

Report File Name: 20637310.MS3
Printed on 8/28/2006

Environmental Analytical Service
Page 1 of 1

12269 East Vassar Drive, Aurora, CO 80014
720.535.5502, Fax 720.535.7555

DATA ASSESSMENT FORM

Project Title:	Vapor Migration Study
Project Manager:	D. Hambrick
Analysis/Method:	EPA Method TO-15
QC Level:	IV/V[1]
SDG:	206359
Matrix:	Air
No. of Samples:	1
No. of Reanalyses/Dilutions:	0
Date Reviewed:	September 24, 2006
Reviewer:	K. Shadowlight
Reference:	*MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 0), EPA Method TO-15* (1/99), and USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review* (2/94)
Samples Reviewed:	MV654

Data Validation Findings

	Findings	Qualifications
1. Sample Management	According to the case narrative for this SDG, the sample was received intact and in good condition, with an acceptable canister pressure. The laboratory also provided a canister QC certification records for the canister utilized. No problems were noted regarding sample handling and transport. The COC was signed and dated by appropriate field and laboratory personnel, and accounted for the sample and analysis presented in this SDG. According to a memo from MWH personnel, dated 08/30/06, the EPA ID for sample MV624 was changed to MV654. The air sample was analyzed within 30 days of collection.	No qualifications were required.

	Findings	Qualifications
3. Calibration	The %RSDs for the initial calibrations and the %Ds for the continuing calibrations were all within the control limit of ≤30%.	No qualifications were required.
4. Method Blanks 081506-MS3	There was one method blank analyzed in association with the sample in this SDG. The laboratory also supplied a canister QC certification blank for the canister used in this SDG. No target compounds were detected in the canister QC certification blank. There were no target compounds reported in the method blank.	No qualifications were required.
5. LCS/LCSD 081506-MS3	One LCS/LCSD pair was analyzed with the sample in this SDG. Spiked target compound tetrachloroethene was recovered above QC limits in the LCS only. All remaining recoveries were within the QC limits, and all RPDs were within the QC limit of ≤30%.	No qualifications were required.
6. Surrogates	The surrogates recoveries were within the method-established control limits of 70-130%.	No qualifications were required.
7. MS/MSD MV654	MS/MSD analyses were performed on sample MV654. The sample was identified as field QC and was not further evaluated.	No qualifications were required.
8. Field QC FB: None ER: MV654 FD: None	Trichloroethene was reported in the equipment blank at a concentration of 0.027ug/m3.	No qualifications were required.
10. Other	The laboratory used the acceptance criteria of -50%/+100% of the internal standard area of the associated continuing calibration; however, for validation purposes, the reviewer applied the more stringent Method TO-15 criteria of ±40% of the mean initial calibration internal standard area. All internal standard area recoveries were checked from the raw data. Results were reported by the laboratory in both ppbv and units of µg/m^3, and in addition, a flux measurement was provided for each result. The reviewer noted that the laboratory reported results	No qualifications were required Any detects between the MDL and the reporting limit were qualified as estimated, "J."

	Findings	Qualifications
Other (cont.)	to three decimal places, rather than to three significant figures. The laboratory reported all nondetects at the MDL; however, at the professional discretion of the reviewer, those results were changed on the sample result summaries to nondetects at the reporting limit (for µg/m^3), rather than the MDL.	
Comments	None.	None.

[1] Level IV/V validation consists of cursory review of the summary forms and minimal review of the raw data as necessary. Based on the Level IV report it was determined by the reviewer that additional items required review. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed. Criteria not reviewed included instrument performance, analytical sequence, initial calibration, continuing calibration, compound identification, and compound quantification.

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206359**
Analytical Method: TO-15 SIM **Laboratory Number: 01**

File: 0635901A.D **Date Sampled:** 07/24/06 **Time:** 11:30
Description: MV654 **Date Received:** 07/25/06
Can/Tube#: 688 **Date Extracted:**
Sam_Type: SA **Date Analyzed:** 08/15/06 **Time:** 18:00
QC_Batch: 081506-MS3 **Can Dilution Factor:** 1.32 3
Air Volume: 500 ml **Flux Factor:** 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Qual code	Flag
75-01-4	Vinyl chloride	0.005	0.005	0.013	0.070	0.013 0.070	0.0005	U	$	U
75-35-4	1,1-Dichloroethene	0.003	0.003	0.013	0.108	0.013 0.108	0.0005		$	U
156-60-5	trans-1,2-Dichloroethene	0.014	0.014	0.059	0.097	0.059 0.097	0.0023		$	U
156-59-2	cis-1,2-Dichloroethene	0.022	0.022	0.091	0.108	0.091 0.108	0.0035		$	U
79-01-6	Trichloroethene	0.002	0.005	0.012	0.146	0.027	0.0010	J		J
127-18-4	Tetrachloroethene	0.002	0.002	0.015	0.185	0.015 0.185	0.0006	U	$	U

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.194	97	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

KS 9/23/06

Level IV/V

12269 East Vassar Drive, Aurora, CO 80014
720.535.5502, Fax 720.535.7555

DATA ASSESSMENT FORM

Project Title:	Vapor Migration Study
Project Manager:	D. Hambrick
Analysis/Method:	EPA Method TO-15
QC Level:	IV/V[1]
SDG:	206355
Matrix:	Air
No. of Samples:	8
No. of Reanalyses/Dilutions:	0
Date Reviewed:	September 24, 2006
Reviewer:	K. Shadowlight
Reference:	*MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 0), EPA Method TO-15* (1/99), and USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review* (2/94)
Samples Reviewed:	MV616, MV617, MV618, MV619, MV620, MV621, MV622, MV623

Data Validation Findings

	Findings	Qualifications
1. Sample Management	According to the case narrative for this SDG, the samples were received intact and in good condition, with acceptable canister pressures. The laboratory also provided canister QC certification records for the batches of canisters utilized. No problems were noted regarding sample handling and transport. The COC was signed and dated by appropriate field and laboratory personnel, and accounted for the samples and analyses presented in this SDG. The air samples were analyzed within 30 days of collection.	No qualifications were required.

	Findings	Qualifications
3. Calibration	The %RSDs for the initial calibrations and the %Ds for the continuing calibrations were all within the control limit of ≤30%.	No qualifications were required.
4. Method Blanks 081706-MS3 081806-MS3	There were two method blanks analyzed in association with the samples in this SDG. The laboratory also supplied canister QC certification blanks for both canisters used in this SDG. No target compounds were detected in the canister QC certification blanks. Method blanks from both QC batches had detects between the reporting limit and the MDL for trichloroethene. Target compound trichloroethene was also reported in samples MV616 and MV617 at concentrations less than five times the method blank concentration.	No qualifications were required. Results for trichloroethene reported between the MDL and reporting limit in samples MV616 and MV617 were qualified as nondetects, "U," at the reporting limit.
5. LCS/LCSD 081706-MS3 081806-MS3	Two LCS/LCSD pairs were analyzed with the samples in this SDG. The recoveries were within the laboratory QC limits of 70-130% and all RPDs were within the QC limit of ≤30%.	No qualifications were required.
6. Surrogates	The surrogate recoveries were within the method-established control limits of 70-130%.	No qualifications were required.
7. MS/MSD MV616	The recoveries for spiked target compound trichloroethene were within laboratory QC limits of 70-130% and the RPD was ≤30%.	No qualifications were required.
8. Field QC FB: None ER: MV654 (SDG 206359) FD: MV590 (SDG 206348) and MV622	The equipment blank had a detect between the MDL and the reporting limit for trichloroethene. Sample MV622 also had a detect for trichloroethene reported between the MDL and the reporting limit. The remaining reportable concentrations of trichloroethene in the associated site samples exceeded five times the concentration reported in the equipment blank. No other target compounds were reported in the equipment blank. Trichloroethene was reported at a	The detect for trichlorethene in sample MV622 was qualified as estimated, "J." No further qualifications were

	Findings	Qualifications
	Trichloroethene was reported at a concentration between the MDL and the reporting limit in sample MV622; however, the detect in sample MV590 was not reportable due to method blank contamination.	No further qualifications were required.
10. Other	The laboratory used the acceptance criteria of -50%/+100% of the internal standard area of the associated continuing calibration; however, for validation purposes, the reviewer applied the more stringent Method TO-15 criteria of ±40% of the mean initial calibration internal standard area. All internal standard area recoveries were checked from the raw data. The internal standard area was below control limit but >25% of the applicable initial calibration mean area for sample MV623. Results were reported by the laboratory in both ppbv and units of µg/m^3, and in addition, a flux measurement was provided for each result. The laboratory reported all nondetects at the MDL; however, at the professional discretion of the reviewer, those results were changed on the sample result summaries to nondetects at the reporting limit (for µg/m^3), rather than the MDL.	The detect for trichloroethene in sample MV623 was qualified as estimated, "J." Any detects reported between the MDL and the reporting limit were qualified as estimated, "J."
Comments	None.	None.

[1] Level IV/V validation consists of cursory review of the summary forms and minimal review of the raw data as necessary. Based on the Level IV report it was determined by the reviewer that additional items required review. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed. Criteria not reviewed included instrument performance, analytical sequence, initial calibration, continuing calibration, compound identification, and compound quantification.

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

SDG: **206355**
Laboratory Number: **01**

File: 0635501A.D
Description: MV616
Can/Tube#: 601
Sam_Type: SA
QC_Batch: 081706-MS3
Air Volume: 500 ml

Date Sampled: 07/21/06 **Time:** 7:46
Date Received: 07/24/06
Date Extracted:
Date Analyzed: 08/17/06 **Time:** 17:51
Can Dilution Factor: 1.42 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Qual code	Flag
79-01-6	Trichloroethene	0.002	0.020	0.013	0.157	0.109 0.157	0.0042	U	B,$	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.205	102	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

IC 9/23/06

Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

SDG: **206355**
Laboratory Number: **02**

File: 0635502A.D
Description: MV617
Can/Tube#: 980
Sam_Type: SA
QC_Batch: 081706-MS3
Air Volume: 500 ml

Date Sampled: 07/21/06 **Time:** 8:31
Date Received: 07/24/06
Date Extracted:
Date Analyzed: 08/17/06 **Time:** 18:37
Can Dilution Factor: 1.45 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Raw Qual	Qual Code	Flag
79-01-6	Trichloroethene	0.002	0.009	0.013	0.160	0.052 0.160	0.0020	U	B, $	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.211	106	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

9/13/06
Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

SDG: **206355**
Laboratory Number: **03**

File: 0635503A.D
Description: MV618
Can/Tube#: 1772
Sam_Type: SA
QC_Batch: 081706-MS3
Air Volume: 500 ml

Date Sampled: 07/21/06 **Time:** 9:26
Date Received: 07/24/06
Date Extracted:
Date Analyzed: 08/17/06 **Time:** 19:21
Can Dilution Factor: 1.40 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Raw Qual	Qual code	Flag
79-01-6	Trichloroethene	0.002	0.031	0.013	0.155	0.172	0.0066			

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.186	93	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206355
Laboratory Number: 04

File: 0635504A.D
Description: MV619
Can/Tube#: 214
Sam_Type: SA
QC_Batch: 081806-MS3
Air Volume: 500 ml

Date Sampled: 07/21/06 **Time:** 10:16
Date Received: 07/24/06
Date Extracted:
Date Analyzed: 08/18/06 **Time:** 14:40
Can Dilution Factor: 1.45 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Qual code	Flag
79-01-6	Trichloroethene	0.002	0.030	0.013	0.160	0.166	0.0064			

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
	Toluene-d8	0.200	0.173	87	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206355
Laboratory Number: 05

File: 0635505A.D
Description: MV620
Can/Tube#: 822
Sam_Type: SA
QC_Batch: 081706-MS3
Air Volume: 500 ml

Date Sampled: 07/21/06 **Time:** 10:17
Date Received: 07/24/06
Date Extracted:
Date Analyzed: 08/17/06 **Time:** 20:55
Can Dilution Factor: 1.37 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Lab Qual	Flag
79-01-6	Trichloroethene	0.002	0.074	0.012	0.152	0.407	0.0157		

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.208	104	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206355
Laboratory Number: 06

File: 0635506A.D
Description: MV621
Can/Tube#: 352
Sam_Type: SA
QC_Batch: 081706-MS3
Air Volume: 500 ml

Date Sampled: 07/21/06 **Time:** 11:10
Date Received: 07/24/06
Date Extracted:
Date Analyzed: 08/17/06 **Time:** 21:37
Can Dilution Factor: 1.49 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Real Qual	Qual code	Flag
79-01-6	Trichloroethene	0.002	0.029	0.013	0.165	0.162	0.0062	J		J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.224	112	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

SDG: **206355**
Laboratory Number: **07**

File: 0635507A.D
Description: MV622
Can/Tube#: 398
Sam_Type: SA
QC_Batch: 081806-MS3
Air Volume: 500 ml

Date Sampled: 07/21/06 **Time:** 11:16
Date Received: 07/24/06
Date Extracted:
Date Analyzed: 08/18/06 **Time:** 15:20
Can Dilution Factor: 1.39 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Qual code	Flag
79-01-6	Trichloroethene	0.002	0.021	0.013	0.154	0.116	0.0045	J	F	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.208	104	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206355**
Analytical Method: TO-15 SIM **Laboratory Number: 08**

File: 0635508A.D
Description: MV623
Can/Tube#: 380
Sam_Type: SA
QC_Batch: 081806-MS3
Air Volume: 500 ml

Date Sampled: 07/21/06 **Time:** 11:17
Date Received: 07/24/06
Date Extracted:
Date Analyzed: 08/18/06 **Time:** 16:00
Can Dilution Factor: 1.37 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Qual code	Flag
79-01-6	Trichloroethene	0.002	0.042	0.012	0.152	0.231	0.0089	J	I	

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.226	113	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV

CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA

MEC[X]
12269 East Vassar Drive
Aurora, CO 80014

Package ID: B54VO8
Task Order: 1261.001D.05
SDG No.: 206348, 206350
No. of Analyses: 26

Laboratory: Environmental Analytical Service
Reviewer: L. Calvin
Analysis/Method: Volatiles by Method TO-15 SIM

Date: September 17, 2006
Reviewer's Signature: L Calvin

ACTION ITEMS[a]	
1. **Case Narrative Deficiencies**	
2. **Out of Scope Analyses**	
3. **Analyses Not Conducted**	
4. **Missing Hardcopy Deliverables**	
5. **Incorrect Hardcopy Deliverables**	Laboratory reported results to three decimal places rather than three significant figures.
6. **Deviations from Analysis Protocol, e.g.,**	Qualifications were assigned for the following:
Holding Times	--exceeding analytical holding time
GC/MS Tune/Inst. Performance	--method blank contamination
Calibration	--internal standard areas below method control limits
Method blanks	--detects between the MDL and reporting limit estimated
Surrogates	--nondetects at MDL ammended to nondetects at reporting limit
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification	
Quantitation	
System Performance	

COMMENTS[b]

[a] Subcontracted analytical laboratory is not meeting contract and/or method requirements.
[b] Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.

DATA VALIDATION REPORT

Vapor Migration Study

ANALYSIS: VOLATILES

SAMPLE DELIVERY GROUPS: 206348, 206350

Prepared by

MEC^X, LLC
12269 East Vassar Drive
Aurora, CO 80014

1. INTRODUCTION

Task Order Title:	Vapor Migration Study
MEC^X Project Number:	1261.001D.05
Sample Delivery Group:	206348, 206350
Project Manager:	D. Hambrick
Matrix:	Air
Analysis:	Volatiles
QC Level:	Level IV/V
No. of Samples:	26
No. of Reanalyses/Dilutions:	0
Reviewer:	L. Calvin
Date of Review:	September 17, 2006

The samples listed in Table 1 were validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 0), EPA Method TO-15* (1/99), and the *National Functional Guidelines for Organic Data Review* (2/94). Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

Table 1. Sample Identification

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
BZVF01S01	MV575	206348-01	Air	TO-15 SIM
BZVF01E01	MV576	206348-02	Air	TO-15 SIM
CLVF01S01	MV577	206348-03	Air	TO-15 SIM
CLVF02S01	MV578	206348-04	Air	TO-15 SIM
CLVF03S01	MV579	206348-05	Air	TO-15 SIM
B1VF01S01	MV580	206348-06	Air	TO-15 SIM
B1VF02S01	MV581	206348-07	Air	TO-15 SIM
LXVF01S01	MV582	206348-08	Air	TO-15 SIM
LXVF01D01	MV583	206348-09	Air	TO-15 SIM
LXVF02S01	MV584	206348-10	Air	TO-15 SIM
BTVF01S01	MV585	206348-11	Air	TO-15 SIM
NCVF01S01	MV586	206348-12	Air	TO-15 SIM
FSVF01S01	MV587	206348-13	Air	TO-15 SIM
CFVF01S01	MV588	206348-14	Air	TO-15 SIM
CFVF02S01	MV589	206348-15	Air	TO-15 SIM
DAVF01S01	MV590	206348-16	Air	TO-15 SIM
DAVF02S01	MV591	206348-17	Air	TO-15 SIM
LXVF03S01	MV592	206350-01	Air	TO-15 SIM
LXVF04S01	MV593	206350-02	Air	TO-15 SIM
LXVF03S02	MV594	206350-03	Air	TO-15 SIM
LXVF05S01	MV595	206350-04	Air	TO-15 SIM
LXVF03S03	MV596	206350-05	Air	TO-15 SIM
LXVF03D01	MV597	206350-06	Air	TO-15 SIM
LXVF06S01	MV598	206350-07	Air	TO-15 SIM
LXVF03E01	MV599	206350-08	Air	TO-15 SIM
LXVF03S04	MV600	206350-09	Air	TO-15 SIM

2. DATA VALIDATION FINDINGS

2.1 SAMPLE MANAGEMENT

According to the case narratives for these SDGs, the samples were received intact and in good condition, with acceptable canister pressures. The laboratory also provided canister QC certification records for the batches of canisters utilized. No problems were noted regarding sample handling and transport. No qualifications were required.

2.1.2 Chain of Custody

The COCs were signed and dated by appropriate field and laboratory personnel, and accounted for the samples and analyses presented in these SDGs. No qualifications were required.

2.1.3 Holding Times

The air samples were analyzed within 30 days of collection, with the exception of sample MV579. The sample required multiple analyses (see section 2.11) and the acceptable analysis reported by the laboratory was analyzed one day beyond the 30-day holding time. The result for sample MV579 was qualified as estimated, "J." No further qualifications were required.

2.2 GC/MS TUNING

A BFB tune was not provided for one of the eight analytical sequences of these SDGs. The reviewer noted that the laboratory usually incorporated the BFB into the CCV or method blank analysis; therefore, the BFB analysis was not always performed at the beginning of the analytical sequence, as prescribed by the method. However, in all cases, the analysis of the BFB preceded the analysis of samples in an analytical sequence. All provided tunes met the method ion abundance criteria which were derived from USEPA SW-846 Method 8240B, and all samples were analyzed within 24 hours of the BFB injection times. No qualifications were assigned.

2.3 CALIBRATION

Three initial calibrations (two SIM and one full-scan) were associated with the sample analyses of these SDGs, dated 08/02/06 and 08/09/06 (SIM), and 08/08/06 (full-scan). The %RSDs were within the method QC limit of ≤30% for all of the initial calibrations. Eight continuing calibrations were associated with the sample analyses, dated 08/03/06, 08/04/06, 08/06/06, 08/13/06, 08/14/06, 08/15/06 (two), and 08/17/06. The applicable target compound %Ds for all continuing calibrations were within the method QC limit of ≤30%.

Although the method does not specify minimum response factor criteria, the reviewer noted that average RRFs for the initial calibrations and RRFs for the continuing calibrations were ≥0.05 for all applicable target compounds. The %RSDs for the initial calibrations and %Ds for the continuing

calibrations were verified from the raw data for several analytes and no errors were found. No qualifications were required.

2.4 BLANKS

Eight method blanks (QC batches 080306-MS3, 080406-MS3, 080606-MS3, 081306-MS3, 081406-MS3, 081506-MS1, 081506-MS3, and 081706-MS1) were analyzed with these SDGs. The laboratory also supplied canister QC certification blanks for all canisters used in these SDGs. No target compounds were detected in the canister QC certification blanks.

Method blanks from QC batches 080306-MS3, 080606-MS3, and 081406-MS3 had target compound detects between the MDL and the reporting limit, and all had one or more associated samples with detects at concentrations less than five times the method blank concentrations. The reviewer recalculated rounded method blank and sample concentrations to more accurately determine contamination qualifications. Results for trichloroethene reported between the MDL and reporting limit in samples MV578, MV583, MV584, and MV591, tetrachloroethene in sample MV593, and both trichloroethene and tetrachloroethene in samples MV576 and MV599 were qualified as nondetects, "U," at the reporting limit.

Review of the method blank raw data indicated no false positives or false negatives. No further qualifications were required.

2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Eight LCS/LCSD pairs (QC batches 080306-MS3, 080406-MS3, 080606-MS3, 081306-MS3, 081406-MS3, 081506-MS1, 081506-MS3, and 081706-MS1) were analyzed with these SDGs. Tetrachloroethene was recovered above the laboratory QC limits of 70-130% in the LCSD only of LCS/LCSD pairs 080306-MS3 and 081406-MS3. All remaining recoveries were within the QC limits, and all RPDs were within the QC limit of ≤30%. No qualifications were required.

2.6 SURROGATE RECOVERY

The surrogate recoveries were within the laboratory QC limits of 70-130% for all samples in these SDGs. A representative number of recoveries were calculated from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Two sets of MS/MSD analyses were performed for the two SDGs, on site samples MV575 and MV592. Recoveries for 1,1-dichloroethene and trichloroethene were below the laboratory QC limits of 70-130% but ≥10% in the MSD only of MV575 MS/MSD, and the RPDs for both

compounds exceeded the QC limit of ≤30%. All recoveries and RPDs were within the QC limits for MV592 MS/MSD. No qualifications were required.

2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

2.8.1 Trip Blanks

There was no trip blank sample associated with the site samples in these SDGs. No qualifications were required.

2.8.2 Field Blanks and Equipment Rinsates

Samples MV576 and MV599 were identified as equipment blanks for the samples of SDGs 206348 and 206350, respectively. Trichloroethene and tetrachlorothene were both reported by the laboratory between the MDL and reporting limit in both equipment blanks; however, all equipment blank results were qualified as nondetects due to method blank contamination (see section 2.4). No site sample qualifications were required.

2.8.3 Field Duplicates

Samples MV582/MV583 from SDG 206348 and samples MV592/MV597 from SDG 206350 were identified as field duplicates. Samples MV582 and MV583 had common detects for trichloroethene between the reporting limit and the MDL; however, the result in sample MV583 was qualified as a nondetect due to method blank contamination. Samples MV592 and MV597 had common detects above the reporting limit for trichloroethene. Tetrachloroethene was detected between the reporting limit and the MDL in sample MV592 and above the reporting limit in sample MV597, and cis-1,2-dichloroethene was detected only in sample MV597. The reviewer noted that sample MV592 was analyzed at a 50× dilution by SIM, and the field duplicate, MV597, was analyzed at approximately a 2× dilution by full-scan method. Although the resulting dilutions of the samples were roughly similar, the SIM and full-scan analyses were not comparable for duplicate purposes.

2.9 INTERNAL STANDARDS PERFORMANCE

The laboratory used the acceptance criteria of -50%/+100% of the internal standard area of the associated continuing calibration; however, for validation purposes, the reviewer applied the more stringent Method TO-15 criteria of ±40% of the mean initial calibration internal standard area. All internal standard area recoveries were checked from the raw data.

Internal standard areas were below control limits but >25% of the applicable initial calibration mean area for samples MV576, MV583, MV584, MV587, MV588, MV591, MV592, MV594, and MV599. Results for the aforementioned samples were qualified as estimated, "UJ," for nondetects, and "J," for detects. The internal standard area for sample MV579 was above the control limit. The result for trichloroethene in MV579 was qualified as estimated, "J." No further qualifications were required.

2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for volatile target compound trichloroethene only in 16 samples, and for six volatile compounds in the remaining samples by modified EPA Method TO-15 SIM. Review of the sample chromatograms, retention times, and spectra indicated no problems with target compound identification. No qualifications were required.

2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. No calculation or transcription errors were found. The reporting limits were supported by the low point of the initial calibration and the laboratory MDL study.

Samples MV579, MV592, MV594, MV595, MV596, MV597, MV598, and MV600 required lower volume analyses, or "dilution" due to either matrix interference or high concentrations of target compounds. In addition to dilution, samples MV579, MV595, MV596, and MV597 required reanalysis by full-scan method due to high concentrations of target compounds exceeding the calibration range of the SIM method. Only the acceptable dilutions and reanalyses were reported by the laboratory. MDLs and reporting limits were adjusted appropriately for dilution and/or full-scan analysis.

The laboratory reported all nondetects at the MDL; however, at the professional discretion of the reviewer, those results were changed on the sample result summaries to nondetects at the reporting limit (for $\mu g/m^3$), rather than the MDL. Results were reported by the laboratory in both ppbv and units of $\mu g/m^3$, and in addition, a flux measurement was provided for each result. The reviewer noted that the laboratory reported results to three decimal places, rather than to three significant figures. No qualifications were required.

2.12 TENTATIVELY IDENTIFIED COMPOUNDS

TICs were not reported by the laboratory for this SDG. No qualifications were required.

2.13 SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance. No qualifications were required.

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206348
Laboratory Number: 01

File: 0634801A.D
Description: MV575
Can/Tube#: 789
Sam_Type: SA
QC_Batch: 080306-MS3
Air Volume: 500 ml

Date Sampled: 07/17/06 **Time:** 10:41
Date Received: 07/19/06
Date Extracted:
Date Analyzed: 08/03/06 **Time:** 14:34
Can Dilution Factor: 1.35 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Flag
79-01-6	Trichloroethene	0.002	0.002	0.012	0.149	~~0.012~~ 0.149	0.0005	U

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.194	97	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09.20.06
Level IV

20634801.MS3
Printed on 8/9/2006

Environmental Analytical Service
Page 1 of 1

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206348
Laboratory Number: 02

File: 0634802A.D
Description: MV576
Can/Tube#: 603
Sam_Type: SA
QC_Batch: 081406-MS1
Air Volume: 500 ml

Date Sampled: 07/17/06 **Time:** 10:39
Date Received: 07/19/06
Date Extracted:
Date Analyzed: 08/14/06 **Time:** 19:09
Can Dilution Factor: 1.39 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Flag
75-01-4	Vinyl chloride	0.005	0.005	0.014	0.073	~~0.014~~ 0.073	0.0005	U
75-35-4	1,1-Dichloroethene	0.003	0.003	0.013	0.114	~~0.013~~ 0.114	0.0005	U
156-60-5	trans-1,2-Dichloroethene	0.015	0.015	0.062	0.102	~~0.062~~ 0.102	0.0024	U
156-59-2	cis-1,2-Dichloroethene	0.024	0.024	0.096	0.114	~~0.096~~ 0.114	0.0037	U
79-01-6	Trichloroethene	0.002	0.005	0.013	0.154	~~0.025~~ 0.154	0.0010	J
127-18-4	Tetrachloroethene	0.002	0.006	0.016	0.195	~~0.044~~ 0.195	0.0017	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.212	106	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09.20.06
Level IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206348
Laboratory Number: 03

File: 0634803A.D
Description: MV577
Can/Tube#: 175
Sam_Type: SA
QC_Batch: 080306-MS3
Air Volume: 500 ml

Date Sampled: 07/17/06 **Time:** 12:46
Date Received: 07/19/06
Date Extracted:
Date Analyzed: 08/03/06 **Time:** 16:01
Can Dilution Factor: 1.39 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Flag
79-01-6	Trichloroethene	0.002	0.002	0.013	0.154	~~0.013~~ 0.154	0.0005	U

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.174	87	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09.20.06
Level IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

SDG: **206348**
Laboratory Number: **04**

File: 0634804A.D
Description: MV578
Can/Tube#: 416
Sam_Type: SA
QC_Batch: 080306-MS3
Air Volume: 500 ml

Date Sampled: 07/17/06 **Time:** 12:48
Date Received: 07/19/06
Date Extracted:
Date Analyzed: 08/03/06 **Time:** 16:43
Can Dilution Factor: 1.40 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	very qual	qual code	Flag
79-01-6	Trichloroethene	0.002	0.012	0.013	0.155	~~0.067~~ 0.155	0.0026	u	B $	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.177	88	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

AC 09-20-06
Level IV

20634804.MS3
Printed on 8/9/2006

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Full Scan GC/MS
Analytical Method: TO-15

File: 0634805A.D
Description: MV579
Can/Tube#: 190
Sam_Type: SA
QC_Batch: 081706-MS1
Air Volume: 462 ml

SDG: 206348
Laboratory Number: 05

Date Sampled: 07/17/06 **Time:** 14:04
Date Received: 07/19/06
Date Extracted:
Date Analyzed: 08/17/06 **Time:** 16:22
Can Dilution Factor: 1.46 2
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Flag
79-01-6	Trichloroethene	0.21	22.32	1.14	9.00	123.45	4.753	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	10.000	10.550	105	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

AM
9/25/06

Level IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206348
Laboratory Number: 06

File: 0634806A.D
Description: MV580
Can/Tube#: 642
Sam_Type: SA
QC_Batch: 080406-MS3
Air Volume: 500 ml

Date Sampled: 07/17/06 **Time:** 15:02
Date Received: 07/19/06
Date Extracted:
Date Analyzed: 08/04/06 **Time:** 16:55
Can Dilution Factor: 1.47 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Flag
79-01-6	Trichloroethene	0.002	0.007	0.013	0.163	0.037	0.0014	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.183	91	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206348**
Analytical Method: TO-15 SIM **Laboratory Number: 07**

File:	0634807A.D	**Date Sampled:**	07/17/06	**Time:**	15:05
Description:	MV581	**Date Received:**	07/19/06		
Can/Tube#:	161	**Date Extracted:**			
Sam_Type:	SA	**Date Analyzed:**	08/04/06	**Time:**	17:41
QC_Batch:	080406-MS3	**Can Dilution Factor:**	1.40		3
Air Volume:	500 ml	**Flux Factor:**		0.0385	0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)			Flag
79-01-6	Trichloroethene	0.002	0.002	0.013	0.155	~~0.013~~ 0.155	0.0005	U	ϕ	U

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.201	100	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206348
Laboratory Number: 08

File: 0634808A.D
Description: MV582
Can/Tube#: 308
Sam_Type: SA
QC_Batch: 080406-MS3
Air Volume: 500 ml

Date Sampled: 07/17/06 **Time:** 16:20
Date Received: 07/19/06
Date Extracted:
Date Analyzed: 08/04/06 **Time:** 18:25
Can Dilution Factor: 1.52 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Flag
79-01-6	Trichloroethene	0.002	0.003	0.014	0.168	0.018	0.0007	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.183	92	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

File: 0634809A.D
Description: MV583
Can/Tube#: 321
Sam_Type: SA
QC_Batch: 080306-MS3
Air Volume: 500 ml

SDG: 206348
Laboratory Number: 09

Date Sampled: 07/17/06 **Time:** 16:26
Date Received: 07/19/06
Date Extracted:
Date Analyzed: 08/03/06 **Time:** 23:35
Can Dilution Factor: 1.42 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Val/Qual	Qual Code	Flag
79-01-6	Trichloroethene	0.002	0.002	0.013	0.157	~~0.013~~ 0.157	0.0005	UJ	BI$	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.192	96	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09.20.06
Level IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

SDG: 206348
Laboratory Number: 10

File: 0634810A.D
Description: MV584
Can/Tube#: 521
Sam_Type: SA
QC_Batch: 080306-MS3
Air Volume: 500 ml

Date Sampled: 07/17/06 **Time:** 16:24
Date Received: 07/19/06
Date Extracted:
Date Analyzed: 08/03/06 **Time:** 0:12
Can Dilution Factor: 1.38 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	val qual	qual code	Flag
79-01-6	Trichloroethene	0.002	0.003	0.012	0.153	~~0.015~~ 0.153	0.0006	UJ	BI$	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.154	77	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09.20.06
Level IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: **TO-15 SIM**

SDG: 206348
Laboratory Number: 11

File: 0634811A.D
Description: MV585
Can/Tube#: 342
Sam_Type: SA
QC_Batch: 080406-MS3
Air Volume: 500 ml

Date Sampled: 07/18/06 **Time:** 8:20
Date Received: 07/19/06
Date Extracted:
Date Analyzed: 08/04/06 **Time:** 19:21
Can Dilution Factor: 1.40 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Flag
79-01-6	Trichloroethene	0.002	0.007	0.013	0.155	0.036	0.0014	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.164	82	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG:** 206348
Analytical Method: TO-15 SIM **Laboratory Number:** 12

File: 0634812A.D
Description: MV586
Can/Tube#: 392
Sam_Type: SA
QC_Batch: 080406-MS3
Air Volume: 500 ml

Date Sampled: 07/18/06 **Time:** 9:15
Date Received: 07/19/06
Date Extracted:
Date Analyzed: 08/04/06 **Time:** 20:06
Can Dilution Factor: 1.62 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Flag
79-01-6	Trichloroethene	0.003	0.005	0.015	0.179	0.026	0.0010	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.181	91	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206348
Laboratory Number: 13

File: 0634813A.D
Description: MV587
Can/Tube#: 370
Sam_Type: SA
QC_Batch: 080406-MS3
Air Volume: 500 ml

Date Sampled: 07/18/06 **Time:** 10:12
Date Received: 07/19/06
Date Extracted:
Date Analyzed: 08/04/06 **Time:** 20:50
Can Dilution Factor: 1.44 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Val Code	Flag
79-01-6	Trichloroethene	0.002	0.114	0.013	0.159	0.632	0.0243	J	I

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.193	96	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206348
Laboratory Number: 14

File: 0634814A.D
Description: MV588
Can/Tube#: 318
Sam_Type: SA
QC_Batch: 080406-MS3
Air Volume: 500 ml

Date Sampled: 07/18/06 **Time:** 11:04
Date Received: 07/19/06
Date Extracted:
Date Analyzed: 08/04/06 **Time:** 21:30
Can Dilution Factor: 1.43 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	rev Qual	qual Code	Flag
79-01-6	Trichloroethene	0.002	0.082	0.013	0.158	0.455	0.0175	J	I	

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.181	91	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206348**
Analytical Method: TO-15 SIM **Laboratory Number: 15**

File: 0634815A.D
Description: MV589
Can/Tube#: 324
Sam_Type: SA
QC_Batch: 080406-MS3
Air Volume: 500 ml

Date Sampled: 07/18/06 **Time:** 11:06
Date Received: 07/19/06
Date Extracted:
Date Analyzed: 08/04/06 **Time:** 22:15
Can Dilution Factor: 1.48 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Flag
79-01-6	Trichloroethene	0.002	0.060	0.013	0.164	0.329	0.0127	

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.152	76	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Level IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206348
Laboratory Number: 16

File: 0634816A.D
Description: MV590
Can/Tube#: 771
Sam_Type: SA
QC_Batch: 080606-MS3
Air Volume: 500 ml

Date Sampled: 07/18/06 **Time:** 12:04
Date Received: 07/19/06
Date Extracted:
Date Analyzed: 08/06/06 **Time:** 13:32
Can Dilution Factor: 1.37 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Rev Qual	Qual Code	Flag
79-01-6	Trichloroethene	0.002	0.027	0.012	0.152	0.150	0.0058	J		J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.174	87	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

LEVEL IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206348
Laboratory Number: 17

File: 0634817A.D
Description: MV591
Can/Tube#: 345
Sam_Type: SA
QC_Batch: 080606-MS3
Air Volume: 500 ml

Date Sampled: 07/18/06 **Time:** 12:06
Date Received: 07/19/06
Date Extracted:
Date Analyzed: 08/06/06 **Time:** 14:09
Can Dilution Factor: 1.39 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	val qual	qual code	Flag
79-01-6	Trichloroethene	0.002	0.016	0.013	0.154	~~0.087~~ 0.154	0.0033	UJ	BI$	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.189	95	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

DC 09.20.06
Level IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206350
Laboratory Number: 01

File: 0635001A.D
Description: MV592
Can/Tube#: 673
Sam_Type: SA
QC_Batch: 081506-MS3
Air Volume: 10 ml

Date Sampled: 07/19/06 **Time:** 8:02
Date Received: 07/20/06
Date Extracted:
Date Analyzed: 08/15/06 **Time:** 16:36
Can Dilution Factor: 1.36 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Flag
75-01-4	Vinyl chloride	0.257	0.257	0.677	3.590	0.677 3.590	0.0261	U
75-35-4	1,1-Dichloroethene	0.158	0.158	0.646	5.565	0.646 5.565	0.0249	U
156-60-5	trans-1,2-Dichloroethene	0.738	0.738	3.022	5.011	3.022 5.011	0.1163	U
156-59-2	cis-1,2-Dichloroethene	1.151	1.151	4.712	5.565	4.712 5.565	0.1814	U
79-01-6	Trichloroethene	0.111	40.632	0.615	7.524	224.782	8.6541	
127-18-4	Tetrachloroethene	0.110	0.120	0.769	9.534	0.844	0.0325	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.258	129	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09.20.06
Level III/IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206350
Laboratory Number: 02

File: 0635002A.D
Description: MV593
Can/Tube#: 769
Sam_Type: SA
QC_Batch: 081406-MS1
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:** 9:03
Date Received: 07/20/06
Date Extracted:
Date Analyzed: 08/14/06 **Time:** 21:01
Can Dilution Factor: 1.38 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Flag
75-01-4	Vinyl chloride	0.005	0.005	0.014	0.073	~~0.014~~ 0.073	0.0005	U
75-35-4	1,1-Dichloroethene	0.003	0.006	0.013	0.113	0.024	0.0009	J
156-60-5	trans-1,2-Dichloroethene	0.015	0.015	0.061	0.102	~~0.061~~ 0.102	0.0023	U
156-59-2	cis-1,2-Dichloroethene	0.023	0.023	0.096	0.113	~~0.096~~ 0.113	0.0037	U
79-01-6	Trichloroethene	0.002	0.030	0.012	0.153	0.168	0.0065	
127-18-4	Tetrachloroethene	0.002	0.007	0.016	0.193	~~0.047~~ 0.193	0.0018	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.180	90	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

09.20.06
Level IV/V

20635002.MS3
Printed on 8/16/2006

Environmental Analytical Service
Page 1 of 1

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206350**
Analytical Method: TO-15 SIM **Laboratory Number: 03**

File:	0635003A.D	**Date Sampled:**	07/19/06	**Time:**	10:02
Description:	MV594	**Date Received:**	07/20/06		
Can/Tube#:	532	**Date Extracted:**			
Sam_Type:	SA	**Date Analyzed:**	08/15/06	**Time:**	17:14
QC_Batch:	081506-MS3	**Can Dilution Factor:**	1.36		3
Air Volume:	10 ml	**Flux Factor:**		0.0385	0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Flag
75-01-4	Vinyl chloride	0.257	0.257	0.677	3.590	~~0.677~~ 3.590	0.0261	U
75-35-4	1,1-Dichloroethene	0.158	0.158	0.646	5.565	~~0.646~~ 5.565	0.0249	U
156-60-5	trans-1,2-Dichloroethene	0.738	1.087	3.022	5.011	4.450	0.1713	J
156-59-2	cis-1,2-Dichloroethene	1.151	1.930	4.712	5.565	7.899	0.3041	
79-01-6	Trichloroethene	0.111	96.884	0.615	7.524	535.974	20.6350	
127-18-4	Tetrachloroethene	0.110	0.355	0.769	9.534	2.486	0.0957	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.206	103	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

DC 09-20-06
Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Full Scan GC/MS
Analytical Method: TO-15

File: 0635004C.D
Description: MV595
Can/Tube#: 306
Sam_Type: SA
QC_Batch: 081706-MS1
Air Volume: 10 ml

SDG: 206350
Laboratory Number: 04

Date Sampled: 07/19/06 **Time:** 10:52
Date Received: 07/20/06
Date Extracted:
Date Analyzed: 08/17/06 **Time:** 17:08
Can Dilution Factor: 2.56 1
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	val	qual code	Flag
75-01-4	Vinyl chloride	12.0	12.0	31.8	344.6	~~31.8~~ 344.6	1.22	U	$	U
75-35-4	1,1-Dichloroethene	19.5	19.5	79.6	544.7	~~79.6~~ 544.7	3.06	↓	↓	U
156-60-5	trans-1,2-Dichloroethene	79.6	79.6	325.9	461.1	~~325.9~~ 461.1	12.55	↓	↓	U
156-59-2	cis-1,2-Dichloroethene	13.6	35.1	55.5	539.5	143.6	5.53	J		J
79-01-6	Trichloroethene	16.6	822.7	92.1	729.4	4,551.0	175.21			
127-18-4	Tetrachloroethene	10.5	10.5	73.6	924.2	~~73.6~~ 924.2	2.83	U	$	U

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	10.000	9.904	99	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

VOC 09-20-06
Level IV / V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Full Scan GC/MS **SDG: 206350**
Analytical Method: TO-15 **Laboratory Number: 05**

File:	0635005B.D	**Date Sampled:**	07/19/06	**Time:**	12:19
Description:	MV596	**Date Received:**	07/20/06		
Can/Tube#:	310	**Date Extracted:**			
Sam_Type:	SA	**Date Analyzed:**	08/17/06	**Time:**	14:45
QC_Batch:	081706-MS1	**Can Dilution Factor:**	1.81		1
Air Volume:	10 ml	**Flux Factor:**		0.0385	0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	rep qual	qual code	Flag
75-01-4	Vinyl chloride	8.5	8.5	22.5	243.6	~~22.5~~ 243.6	0.87	U	4	U
75-35-4	1,1-Dichloroethene	13.8	13.8	56.3	385.1	~~56.3~~ 385.1	2.17	↓	↓	U
156-60-5	trans-1,2-Dichloroethene	56.3	56.3	230.4	326.0	~~230.4~~ 326.0	8.87	↓	↓	U
156-59-2	cis-1,2-Dichloroethene	9.6	9.8	39.3	381.4	40.2	1.55	J		J
79-01-6	Trichloroethene	11.8	249.5	65.1	515.7	1,380.4	53.15			
127-18-4	Tetrachloroethene	7.4	9.5	52.0	653.4	66.3	2.55	J		J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	10.000	9.997	100	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09.20.06
Level IV / V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Full Scan GC/MS
Analytical Method: TO-15

SDG: 206350
Laboratory Number: 06

File: 0635006A.D
Description: MV597
Can/Tube#: 388
Sam_Type: SA
QC_Batch: 081506-MS1
Air Volume: 216 ml

Date Sampled: 07/19/06 **Time:** 12:43
Date Received: 07/20/06
Date Extracted:
Date Analyzed: 08/15/06 **Time:** 14:44
Can Dilution Factor: 1.41 2
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	val qual	code	Flag
75-01-4	Vinyl chloride	0.31	0.31	0.81	8.79	~~0.81~~ 8.79	0.031	U		U
75-35-4	1,1-Dichloroethene	0.50	0.50	2.03	13.89	~~2.03~~ 13.89	0.078			U
156-60-5	trans-1,2-Dichloroethene	2.03	2.03	8.31	11.76	~~8.31~~ 11.76	0.320			U
156-59-2	cis-1,2-Dichloroethene	0.35	2.27	1.42	13.76	9.31	0.358	J		J
79-01-6	Trichloroethene	0.42	131.22	2.35	18.60	725.91	27.948			
127-18-4	Tetrachloroethene	0.27	0.51	1.88	47.13	3.54	0.136	J		J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	10.000	9.822	98	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09.20.06
Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206350**
Analytical Method: TO-15 SIM **Laboratory Number: 07**

File:	0635007A.D	**Date Sampled:**	07/19/06	**Time:**	13:26
Description:	MV598	**Date Received:**	07/20/06		
Can/Tube#:	181	**Date Extracted:**			
Sam_Type:	SA	**Date Analyzed:**	08/15/06	**Time:**	15:56
QC_Batch:	081506-MS3	**Can Dilution Factor:**	1.40		3
Air Volume:	200 ml	**Flux Factor:**		0.0385	0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	val Qual	qual code	Flag
75-01-4	Vinyl chloride	0.013	0.013	0.035	0.185	~~0.035~~ 0.185	0.0013	U		U
75-35-4	1,1-Dichloroethene	0.008	0.008	0.033	0.286	~~0.033~~ 0.286	0.0013	U		U
156-60-5	trans-1,2-Dichloroethene	0.038	0.146	0.156	0.258	0.599	0.0231			
156-59-2	cis-1,2-Dichloroethene	0.059	0.075	0.243	0.286	0.306	0.0118			
79-01-6	Trichloroethene	0.006	4.543	0.032	0.387	25.134	0.9677			
127-18-4	Tetrachloroethene	0.006	0.017	0.040	0.491	0.122	0.0047	J		J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.192	96	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

VAC 0920.04
Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206350
Laboratory Number: 08

File: 0635008A.D
Description: MV599
Can/Tube#: 401
Sam_Type: SA
QC_Batch: 081406-MS1
Air Volume: 500 ml

Date Sampled: 07/19/06 **Time:** 14:10
Date Received: 07/20/06
Date Extracted:
Date Analyzed: 08/14/06 **Time:** 9:43
Can Dilution Factor: 1.40 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	Flag
75-01-4	Vinyl chloride	0.005	0.005	0.014	0.074	0.014	0.0005	U
75-35-4	1,1-Dichloroethene	0.003	0.003	0.013	0.115	0.013	0.0005	U
156-60-5	trans-1,2-Dichloroethene	0.015	0.015	0.062	0.103	0.062	0.0024	U
156-59-2	cis-1,2-Dichloroethene	0.024	0.024	0.097	0.115	0.097	0.0037	U
79-01-6	Trichloroethene	0.002	0.013	0.013	0.155	0.072	0.0028	J
127-18-4	Tetrachloroethene	0.002	0.003	0.016	0.196	0.020	0.0008	J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.198	99	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09.20.06
Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS
Analytical Method: TO-15 SIM

SDG: 206350
Laboratory Number: 09

File: 0635009A.D
Description: MV600
Can/Tube#: 687
Sam_Type: SA
QC_Batch: 081306-MS3
Air Volume: 10 ml

Date Sampled: 07/19/06 **Time:** 15:33
Date Received: 07/20/06
Date Extracted:
Date Analyzed: 08/13/06 **Time:** 14:24
Can Dilution Factor: 1.37 3
Flux Factor: 0.0385 0.0036

CAS#	Compound	MDL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flux ug/(m2*min)	val	qual	Flag
75-01-4	Vinyl chloride	0.258	0.258	0.682	3.616	0.682 3.616	0.0263	U	U	U
75-35-4	1,1-Dichloroethene	0.159	0.159	0.651	5.606	0.651 5.606	0.0251	U	U	U
156-60-5	trans-1,2-Dichloroethene	0.744	0.835	3.044	5.048	3.420	0.1317	J		J
156-59-2	cis-1,2-Dichloroethene	1.160	1.722	4.746	5.606	7.048	0.2713			
79-01-6	Trichloroethene	0.112	74.412	0.619	7.579	411.653	15.8486			
127-18-4	Tetrachloroethene	0.111	0.274	0.775	9.604	1.922	0.0740	J		J

Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
Toluene-d8	0.200	0.202	101	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 09.20.06
Level IV/V

Appendix D

(Electronic)

D-2: Data Validation Report, October/November Sampling Activities

12269 East Vassar Drive, Aurora, CO 80014
720.535.5502, Fax 720.535.7555

DATA ASSESSMENT FORM

Project Title:	Vapor Migration Study
Project Manager:	D. Hambrick
Analysis/Method:	EPA Method TO-15
QC Level:	IV/V[1]
SDG:	206536
Matrix:	Air
No. of Samples:	16
No. of Reanalyses/Dilutions:	6
Date Reviewed:	December 11, 2006
Reviewer:	L. Calvin
Reference:	*MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 0), EPA Method TO-15* (1/99), and USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review* (2/94)
Samples Reviewed:	MV655, MV656, MV657, MV658, MV659, MV660, MV661, MV662, MV663, MV664, MV665, MV666, MV667, MV668, MV669, MV670

Data Validation Findings

	Findings	Qualifications
1. Sample Management	According to the case narrative for this SDG, the samples were received intact and in good condition, with acceptable canister pressures. The laboratory also provided canister QC certification records for the batches of canisters utilized. The COCs were signed and dated by appropriate field and laboratory personnel, and accounted for the samples and analyses presented in this SDG. The full-scan analysis of sample MV661, the SIM analysis of sample MV663, and both the SIM and full-scan analyses of sample MV664 were performed beyond the 30-day holding time. The remaining air samples were analyzed within 30 days of collection.	Retained esults for samples MV661 (full-scan only), MV663, and MV664 were qualified as estimated, "UJ" for nondetects and "J" for detects.

	Findings	Qualifications
3. Calibration	The initial calibration %RSDs and the continuing calibration %Ds were within the method QC limit of ≤30% for all applicable target compounds.	No qualifications were required.
4. Method Blanks 111606-MS3 111706-MS3 112706-MS1 112706-MS3 112906-MS1 113006-MS1 120106-MS1 120106-MS3	Eight method blanks were analyzed with the samples in this SDG. Method blanks 112706-MS3, 113006-MS1, and 120106-MS3 were associated with the full-scan analyses, and had no reported target compound detects. The remaining blanks all had one or more target compound detects between the MDL and the reporting limit as follows: trichloroethene (0.78 µg/m^3) in 111606-MS3; trichloroethene (681.2 µg/m^3) in 111706-MS3; 1,1-dichloroethene (15.69 µg/m3)and trichloroethene (33.92 µg/m^3) in 112706-MS1; 1,1-dichloroethene (52.05 µg/m^3)and trichloroethene (60.85 µg/m^3) in 112906-MS1; and 1,1-dichloroethene (601 µg/m^3), cis-1,2-dichloroethene (1150 µg/m^3), and tetrachloroethene (2795 µg/m^3) in 120106-MS1. Trichloroethene (18787 µg/m^3) was also detected in 120106-MS1 above the reporting limit. Samples MV665, MV668, and MV670 had detects between the MDLs and reporting limits for 1,1-dichloroethene. All remaining sample detects exceeded five times the applicable method blank concentrations. The laboratory also supplied canister QC certification blanks for all canisters used in this SDG. No target compounds were detected in the canister QC certification blanks.	Results for 1,1-dichloroethene in samples MV665, MV668, and MV670 were qualified as nondetects, "U," at the reporting limit.
5. LCS/LCSD 111606-MS3 111706-MS3 112706-MS1 112706-MS3 112906-MS1 113006-MS1 120106-MS1 120106-MS3	Eight LCS/LCSD pairs were analyzed with the samples in this SDG. In the LCSD only of 120106-MS3, vinyl chloride was recovered below the QC limits but ≥10%. All remaining LCS/LCSD recoveries were within the laboratory QC limits of 70-130%, and all RPDs were within the QC limit of ≤30%.	No qualifications were required.
6. Surrogates	The surrogate toluene-d8 was recovered above the QC limits of 70-130% in samples MV663 and MV655. The surrogate was recovered within the laboratory QC limits of 70-130% for all remaining samples.	Detects in samples MV663 and MV665 were qualified as estimated, "J."

	Findings	Qualifications
7. MS/MSD MV661	Native concentrations of cis-1,2-dichloroethene and trichloroethene in the parent sample exceeded four times the spike amount, and recoveries for those compounds were not evaluated. Recoveries for the remaining compounds were within the laboratory QC limits of 70-130%, and the RPDs were within the QC limit of ≤30%.	No qualifications were required.
8. Field QC FB: MV670 ER: None FD: MV662/MV669	The field blank had a detect above the reporting limit for trichloroethene at a concentration of 1580.49µg/m3. Associated site samples MV655, MV656, MV657, MV658, and MV659 had trichloroethene detected at concentrations less than five times the field blank amount. The field duplicate samples had common detects above the reporting limit for trans-1,2-dichloroethene, cis-1,2-dichloroethene, and trichloroethene; with RPDs of 10%, 12%, and 2.5%, respectively. Tetrachloroethene was detected below the reporting limits in both samples. The pair was considered to be in good agreement.	Results for trichloroethene in samples MV655, MV656, MV657, MV658, and MV659 were qualified as estimated, "J."
10. Other	The laboratory used the acceptance criteria of -50%/+100% of the internal standard area of the associated continuing calibration to evaluate samples; however, for validation purposes, the reviewer applied the more stringent Method TO-15 criteria of ±40% of the mean initial calibration internal standard area. For the SIM analysis, the internal standard a,a,a-trifluorotoluene was below the control limits for sample MV663, and for the full-scan analysis of sample MV666, both internal standards pentafluorobenzene and 1,4-difluorobenzene were above the control limits. All samples were analyzed and reported by the SIM method; however, samples MV660, MV661, MV662, MV664, MV666, and MV669 required additional analysis by full-scan method due to high concentrations of target compounds exceeding the calibration range of the SIM method, and the full-scan analyses were performed at lower volumes, or "dilutions." All samples analyzed by SIM (with the exception of sample MV658) also required significant diluations for target compounds. Only the acceptable dilutions and reanalyses were reported by the laboratory. MDLs and	All results were qualified as estimated, "J," for detects and "UJ," for nondetects in sample MV663, and all reported detects were qualified as estimated, "J," in the full-scan analysis of sample MV666. For those samples analyzed by both SIM and full-scan methods, results exceeding the linear range of the calibration in the SIM analyses were rejected, "R," in favor of the full-scan results, and all remaining full-scan results were rejected in favor of acceptable SIM results.

	Findings	Qualifications
10. Other (continued)	reporting limits were adjusted appropriately for dilution and/or full-scan analysis. The laboratory reported results between the MDL and the reporting limit. The laboratory reported any nondetects at the MDL; however, at the professional discretion of the reviewer, those results were changed on the sample result summaries to nondetects at the reporting limit (for $\mu g/m^3$), rather than the MDL. The case narrative for this SDG noted that the laboratory raised the MDLs in sample MV663 due to matrix interference (note that both the surrogate recovery and internal standard area were affected.) Results were reported by the laboratory in both ppbv and units of $\mu g/m^3$. The reviewer noted that the laboratory reported results to two decimal places, rather than to three significant figures.	Detects reported between the MDL and the reporting limit were qualified as estimated, "J."
Comments	None.	None.

[1] Level IV/V validation consists of review of the summary forms and minimal review of the raw data as necessary. The reported values on the summary forms are presumed to be correct and no verification of the values from the raw instrument output is performed.

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG:** 206536
Analytical Method: TO-15 SIM **Laboratory Number:** 15

File: 0653615A.D
Description: MV655
Can/Tube#: 764
Sam_Type: SA
QC_Batch: 112706-MS1
Air Volume: 2 ml

Date Sampled: 11/01/06 11:58
Date Received: 11/03/06 10:00
Date Extracted: 11/27/06 15:35
Date Analyzed: 11/27/06 15:35
Can Dilution Factor: 1.54
Not Detected Flag: U

2

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
79016	Trichloroethene	0.62	40.04	690.95	3.41	221.51	3,822.39	J

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
2037265	Toluene-d8	0.200	0.313	156	70-130	*

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 12.12.06 Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206536**
Analytical Method: TO-15 SIM **Laboratory Number: 16**

File: 0653616A.D
Description: MV656
Can/Tube#: 642
Sam_Type: SA
QC_Batch: 112706-MS1
Air Volume: 2 ml

Date Sampled: 11/01/06 13:50
Date Received: 11/03/06 10:00
Date Extracted: 11/27/06 16:53
Date Analyzed: 11/27/06 16:53
Can Dilution Factor: 1.46
Not Detected Flag: U

rev qual 2 qual code

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
79016	Trichloroethene	0.58	37.96	338.42	3.23	210.00	1,872.20	J / F

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
2037265	Toluene-d8	0.200	0.181	90	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 12-12-06 Level IV / V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206536**
Analytical Method: TO-15 SIM **Laboratory Number: 14**

File: 0653614A.D
Description: MV657
Can/Tube#: 534
Sam_Type: SA
QC_Batch: 112706-MS1
Air Volume: 2 ml

Date Sampled: 11/01/06 9:59
Date Received: 11/03/06 10:00
Date Extracted: 11/27/06 14:47
Date Analyzed: 11/27/06 14:47
Can Dilution Factor: 1.42
Not Detected Flag: U

new qual | 2 qual code

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
79016	Trichloroethene	0.57	36.92	584.77	3.14	204.24	3,234.98	J | F

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
2037265	Toluene-d8	0.200	0.175	88	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 12.12.06 Level III / IV

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206536**
Analytical Method: TO-15 SIM **Laboratory Number: 01**

File: 0653601A.D
Description: MV658
Can/Tube#: 537
Sam_Type: SA
QC_Batch: 111606-MS3
Air Volume: 20 ml

Date Sampled: 10/30/06 11:38
Date Received: 11/03/06 10:00
Date Extracted: 11/16/06 14:47
Date Analyzed: 11/16/06 14:47
Can Dilution Factor: 1.45
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75014	Vinyl chloride	0.14	0.73	0.14	0.36	1.91	1.91 0.36	U U
75354	1,1-Dichloroethene	0.09	0.73	0.09	0.36	2.97	2.97 0.36	U
156605	trans-1,2-Dichloroethene	0.39	3.12	0.39	1.60	12.76	12.76 1.60	U
156592	cis-1,2-Dichloroethene	0.62	3.77	0.62	2.52	15.43	15.43 2.52	U
79016	Trichloroethene	0.06	3.77	63.14	0.32	20.86	349.28	J J
127184	Tetrachloroethene	0.58	3.70	1.50	4.07	25.92	10.48	J J

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
2037265	Toluene-d8	0.200	0.173	87	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 12.12.06 Level IV/V

Report File Name: 20653601.MS3
Printed on 12/4/2006

Environmental Analytical Service
Page 1 of 1

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG:** 206536
Analytical Method: TO-15 SIM **Laboratory Number:** 02

File: 0653602A.D
Description: MV659
Can/Tube#: 792
Sam_Type: SA
QC_Batch: 111606-MS3
Air Volume: 2 ml

Date Sampled: 10/30/06 13:03
Date Received: 11/03/06 10:00
Date Extracted: 11/16/06 15:30
Date Analyzed: 11/16/06 15:30
Can Dilution Factor: 1.47
Not Detected Flag: U

2

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75014	Vinyl chloride	1.40	7.35	1.40	3.69	19.40	3.69	U
75354	1,1-Dichloroethene	0.88	7.35	0.88	3.61	30.08	3.61	U
156605	trans-1,2-Dichloroethene	3.97	31.61	3.97	16.25	129.38	16.25	U
156592	cis-1,2-Dichloroethene	6.25	38.22	6.25	25.57	156.40	25.57	U
79016	Trichloroethene	0.59	38.22	829.12	3.25	211.44	4,586.75	
127184	Tetrachloroethene	5.88	37.49	11.66	41.22	262.77	81.71	J

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
2037265	Toluene-d8	0.200	0.188	94	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Report File Name: 20653602.MS3
Printed on 11/29/2006

Level IV / V

Environmental Analytical Service

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206536**
Analytical Method: TO-15 SIM **Laboratory Number: 03**

File: 0653603A.D
Description: MV660
Can/Tube#: 784
Sam_Type: SA
QC_Batch: 111606-MS3
Air Volume: 0.1 ml

Date Sampled: 10/30/06 15:22
Date Received: 11/03/06 10:00
Date Extracted: 11/16/06 16:21
Date Analyzed: 11/16/06 16:21
Can Dilution Factor: 1.31
Not Detected Flag: U

1
rev qual code

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75014	Vinyl chloride	24.9	131.0	24.9	65.7	345.8 ~~345.8~~	65.7	U U
75354	1,1-Dichloroethene	15.7	131.0	15.7	64.3	536.1 ~~536.1~~	64.3	U ↓
156605	trans-1,2-Dichloroethene	70.7	563.3	5,205.1	289.6	2,306.0	21,308.3	
156592	cis-1,2-Dichloroethene	111.4	681.2	10,783.8	455.7	2,787.5	44,127.9	
79016	Trichloroethene	10.5	681.2	136,204.8	58.0	3,768.5	753,498.1	E R D
127184	Tetrachloroethene	104.8	668.1	104.8	734.7	4,683.5 ~~4683.5~~	~~734.7~~	U U

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
2037265	Toluene-d8	0.200	0.178	89	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 12.12.06 Level IV / V

Report File Name: 20653603.MS3
Printed on 11/29/2006

Environmental Analytical Service
Page 1 of 1

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Full Scan GC/MS **SDG: 206536**
Analytical Method: TO-15 **Laboratory Number: 03**

File: 0653603B.D
Description: MV660
Can/Tube#: 784
Sam_Type: SA
QC_Batch: 112706-MS3
Air Volume: 0.1 ml

Date Sampled: 10/30/06 15:22
Date Received: 11/03/06 10:00
Date Extracted: 11/27/06 17:37
Date Analyzed: 11/27/06 17:37
Can Dilution Factor: 1.31
Not Detected Flag: U

0

very qual | qual code

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75014	Vinyl chloride	1,110	6,681	1,110	2,929	17,634	2,929	U R D
75354	1,1-Dichloroethene	776	6,812	776	3,177	27,875	3,177	U
156605	trans-1,2-Dichloroethene	682	5,764	13,977	2,794	23,596	57,218	
156592	cis-1,2-Dichloroethene	358	6,747	22,221	1,466	27,607	90,929	
79016	Trichloroethene	287	6,747	268,189	1,586	37,322	1,483,648	
127184	Tetrachloroethene	504	6,747	504	3,531	47,294	3,531	U R D

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
2037265	Toluene-d8	10.000	9.526	95	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 12.12.06

Level IV / V

Report File Name: 20653603.FS3
Printed on 12/4/2006

Environmental Analytical Service
Page 1 of 1

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206536**
Analytical Method: TO-15 SIM **Laboratory Number: 04**

File: 0653604A.D
Description: MV661
Can/Tube#: 626
Sam_Type: SA
QC_Batch: 111606-MS3
Air Volume: 0.1 ml

Date Sampled: 10/30/06 15:38
Date Received: 11/03/06 10:00
Date Extracted: 11/16/06 19:13
Date Analyzed: 11/16/06 19:13
Can Dilution Factor: 1.25
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75014	Vinyl chloride	23.8	125.0	23.8	62.7	329.9	329.9 62.7	U U
75354	1,1-Dichloroethene	15.0	125.0	148.3	61.4	511.5	606.9	
156605	trans-1,2-Dichloroethene	67.5	537.5	7,758.5	276.3	2,200.4	31,761.2	
156592	cis-1,2-Dichloroethene	106.3	650.0	20,202.0	434.8	2,659.8	82,667.8	E
79016	Trichloroethene	10.0	650.0	170,496.2	55.3	3,595.9	943,201.2	E
127184	Tetrachloroethene	100.0	637.5	100.0	701.0	4,469.0	4469.0 701.0	U U

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
2037265	Toluene-d8	0.200	0.169	85	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 12.12.06 Level III/IV

Report File Name: 20653604.MS3
Printed on 11/29/2006

Environmental Analytical Service
Page 1 of 1

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Full Scan GC/MS **SDG: 206536**
Analytical Method: TO-15 **Laboratory Number: 04**

File: 0653604A.D
Description: MV661
Can/Tube#: 626
Sam_Type: SA
QC_Batch: 120106-MS3
Air Volume: 0.03 ml

Date Sampled: 10/30/06 15:38
Date Received: 11/03/06 10:00
Date Extracted: 12/01/06 15:57
Date Analyzed: 12/01/06 15:57
Can Dilution Factor: 1.25
Not Detected Flag: U

0

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75014	Vinyl chloride	3,530	21,250	3,530	9,316	56,086	9,316	U
75354	1,1-Dichloroethene	2,469	21,667	2,469	10,103	88,661	10,103	U
156605	trans-1,2-Dichloroethene	2,170	18,333	11,261	8,885	75,052	46,100	J
156592	cis-1,2-Dichloroethene	1,139	21,458	26,033	4,662	87,809	106,529	
79016	Trichloroethene	912	21,458	291,096	5,044	118,710	1,610,371	
127184	Tetrachloroethene	1,602	21,458	1,602	11,231	150,426	11,231	U

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
2037265	Toluene-d8	10.000	10.058	101	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 12.12.06 Level III/IV

Report File Name: 20653604.FS3
Printed on 12/3/2006

Environmental Analytical Service
Page 1 of 1

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206536**
Analytical Method: TO-15 SIM **Laboratory Number: 07**

File: 0653607A.D
Description: MV662
Can/Tube#: 695
Sam_Type: SA
QC_Batch: 111606-MS3
Air Volume: 0.1 ml

Date Sampled: 10/31/06 10:11
Date Received: 11/03/06 10:00
Date Extracted: 11/16/06 20:39
Date Analyzed: 11/16/06 20:39
Can Dilution Factor: 1.62
Not Detected Flag: U

0
rev qual qual code

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75014	Vinyl chloride	31	162	31	81	428	~~428~~ ~~81~~	U U
75354	1,1-Dichloroethene	19	162	19	80	663	~~663~~ ~~80~~	U
156605	trans-1,2-Dichloroethene	87	697	8,648	358	2,852	35,402	
156592	cis-1,2-Dichloroethene	138	842	31,747	563	3,447	129,910	E R
79016	Trichloroethene	13	842	540,094	72	4,660	2,987,849	E
127184	Tetrachloroethene	130	826	709	909	5,792	4,973	J J

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
2037265	Toluene-d8	0.200	0.179	90	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 12.12.06 Level III/IV

Report File Name: 20653607.MS3
Printed on 11/29/2006

Environmental Analytical Service
Page 1 of 1

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Full Scan GC/MS **SDG:** 206536
Analytical Method: TO-15 **Laboratory Number:** 07

File: 0653607A.D
Description: MV662
Can/Tube#: 695
Sam_Type: SA
QC_Batch: 113006-MS1
Air Volume: 0.05 ml

Date Sampled: 10/31/06 10:11
Date Received: 11/03/06 10:00
Date Extracted: 11/30/06 13:40
Date Analyzed: 11/30/06 13:40
Can Dilution Factor: 1.62
Not Detected Flag: U

0
rev qual qual code

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75014	Vinyl chloride	2,745	16,524	2,745	7,244	43,613	7,244	U R D
75354	1,1-Dichloroethene	1,920	16,848	1,920	7,856	68,943	7,856	U
156605	trans-1,2-Dichloroethene	1,688	14,256	6,377	6,909	58,361	26,106	J
156592	cis-1,2-Dichloroethene	886	16,686	22,587	3,625	68,280	92,426	
79016	Trichloroethene	709	16,686	427,687	3,922	92,309	2,366,008	
127184	Tetrachloroethene	1,246	16,686	1,246	8,733	116,971	8,733	U R D

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
2037265	Toluene-d8	10.000	10.474	105	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

DC 12.12.06 Level III/IV

Report File Name: 20653607.FS1
Printed on 12/3/2006

Environmental Analytical Service
Page 1 of 1

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206536**
Analytical Method: TO-15 SIM **Laboratory Number: 11**

File: 0653611E.D
Description: MV663
Can/Tube#: 817
Sam_Type: SA
QC_Batch: 120106-MS1
Air Volume: 0.05 ml

Date Sampled: 10/31/06 15:32
Date Received: 11/03/06 10:00
Date Extracted: 12/01/06 21:35
Date Analyzed: 12/01/06 21:35
Can Dilution Factor: 43.20
Not Detected Flag: U

0

rev'l qual | qual code

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag	
75014	Vinyl chloride	1,642	44,928	1,642	4,333	118,581	4,333	U	UJ
75354	1,1-Dichloroethene	1,037	44,928	11,418	4,243	183,848	46,722	J	J
156605	trans-1,2-Dichloroethene	4,666	37,152	4,666	19,100	152,091	19,100	U	UJ
156592	cis-1,2-Dichloroethene	7,344	44,928	7,344	30,052	183,848	30,052	U	↓
79016	Trichloroethene	691	44,928	55,177	3,824	248,546	305,246	B	J
127184	Tetrachloroethene	6,912	44,064	37,670	48,454	308,895	264,070	J	↓

HI S S

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
2037265	Toluene-d8	0.200	0.279	140	70-130	*

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 12.12.06 Level III / IV

Report File Name: 20653611.MSM
Printed on 12/4/2006

Environmental Analytical Service
Page 1 of 1

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206536**
Analytical Method: TO-15 SIM **Laboratory Number: 05**

File: 0653605A.D
Description: MV664
Can/Tube#: 403
Sam_Type: SA
QC_Batch: 120106-MS1
Air Volume: 0.05 ml

Date Sampled: 10/31/06 8:00
Date Received: 11/03/06 10:00
Date Extracted: 12/01/06 16:54
Date Analyzed: 12/01/06 16:54
Can Dilution Factor: 1.63
Not Detected Flag: U

rev qual / qual code

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag	
75014	Vinyl chloride	62	1,695	110,410	163	4,474	291,411	E	R D
75354	1,1-Dichloroethene	39	1,695	3,100	160	6,937	12,687	J	J H
156605	trans-1,2-Dichloroethene	176	1,402	165,310	721	5,739	676,738	E	R D
156592	cis-1,2-Dichloroethene	277	1,695	333,500	1,134	6,937	1,364,704	E	
79016	Trichloroethene	26	1,695	1,054,101	144	9,378	5,831,388	E	
127184	Tetrachloroethene	261	1,663	7,334	1,828	11,655	51,414		J H

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
2037265	Toluene-d8	0.200	0.219	110	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 12-12-06 Level IV / V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Full Scan GC/MS **SDG: 206536**
Analytical Method: TO-15 **Laboratory Number: 05**

File: 0653605A.D
Description: MV664
Can/Tube#: 403
Sam_Type: SA
QC_Batch: 120106-MS3
Air Volume: 0.03 ml

Date Sampled: 10/31/06 08:00
Date Received: 11/03/06 10:00
Date Extracted: 12/01/06 16:47
Date Analyzed: 12/01/06 16:47
Can Dilution Factor: 8.15
Not Detected Flag: U

0

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75014	Vinyl chloride	23,013	138,550	79,296	60,740	365,683	209,290	J
75354	1,1-Dichloroethene	16,098	141,267	16,098	65,874	578,072	65,874	U
156605	trans-1,2-Dichloroethene	14,152	119,533	170,548	57,933	489,340	698,182	
156592	cis-1,2-Dichloroethene	7,428	139,908	541,856	30,396	572,513	2,217,307	
79016	Trichloroethene	5,945	139,908	2,624,194	32,887	773,986	14,517,292	
127184	Tetrachloroethene	10,446	139,908	10,446	73,225	980,776	73,225	U

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
2037265	Toluene-d8	10.000	10.129	101	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 12.12.06 Level III/IV

Report File Name: 20653605.FS3
Printed on 12/3/2006

Environmental Analytical Service
Page 1 of 1

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206536**
Analytical Method: TO-15 SIM **Laboratory Number: 12**

File: 0653612A.D
Description: MV665
Can/Tube#: 169
Sam_Type: SA
QC_Batch: 112706-MS1
Air Volume: 0.5 ml

Date Sampled: 11/01/06 7:56
Date Received: 11/03/06 10:00
Date Extracted: 11/27/06 17:46
Date Analyzed: 11/27/06 17:46
Can Dilution Factor: 1.74
Not Detected Flag: U

2 very qual qual code

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75014	Vinyl chloride	6.61	180.96	6.61	17.45	477.62	17.45	U
75354	1,1-Dichloroethene	4.18	180.96	17.28	17.09	740.50	70.69	J
156605	trans-1,2-Dichloroethene	18.79	149.64	160.35	76.93	612.59	656.43	
156592	cis-1,2-Dichloroethene	29.58	180.96	699.74	121.04	740.50	2,863.38	
79016	Trichloroethene	2.78	180.96	3,348.46	15.40	1,001.09	18,523.99	
127184	Tetrachloroethene	27.84	177.48	27.84	195.16	1,244.16	195.16	U

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
2037265	Toluene-d8	0.200	0.171	86	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 12.12.06 Level IV/V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206536**
Analytical Method: TO-15 SIM **Laboratory Number: 06**

File: 0653606A.D
Description: MV666
Can/Tube#: 668
Sam_Type: SA
QC_Batch: 111606-MS3
Air Volume: 0.1 ml

Date Sampled: 10/31/06 8:35
Date Received: 11/03/06 10:00
Date Extracted: 11/16/06 19:56
Date Analyzed: 11/16/06 19:56
Can Dilution Factor: 1.47
Not Detected Flag: U

0

very qual / qual code

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75014	Vinyl chloride	28	147	1,615	74	388	4,262	
75354	1,1-Dichloroethene	18	147	883	72	602	3,613	
156605	trans-1,2-Dichloroethene	79	632	65,045	325	2,588	266,278	E
156592	cis-1,2-Dichloroethene	125	764	85,325	511	3,128	349,156	E
79016	Trichloroethene	12	764	399,734	65	4,229	2,211,366	E
127184	Tetrachloroethene	118	750	154	824	5,255	1,083	J

R D J

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
2037265	Toluene-d8	0.200	0.189	94	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 12-12-06 Level IV / V

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Full Scan GC/MS **SDG: 206536**
Analytical Method: TO-15 **Laboratory Number: 06**

File: 0653606A.D
Description: MV666
Can/Tube#: 668
Sam_Type: SA
QC_Batch: 112706-MS3
Air Volume: 0.03 ml

Date Sampled: 10/31/06 08:35
Date Received: 11/03/06 10:00
Date Extracted: 11/27/06 18:52
Date Analyzed: 11/27/06 18:52
Can Dilution Factor: 1.47
Not Detected Flag: U

0

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75014	Vinyl chloride	4,151	24,990	4,151	10,956	65,958	10,956	U
75354	1,1-Dichloroethene	2,904	25,480	2,904	11,882	104,266	11,882	U
156605	trans-1,2-Dichloroethene	2,552	21,560	95,166	10,449	88,261	389,587	
156592	cis-1,2-Dichloroethene	1,340	25,235	99,041	5,482	103,263	405,281	
79016	Trichloroethene	1,072	25,235	438,855	5,932	139,602	2,427,787	
127184	Tetrachloroethene	1,884	25,235	1,884	13,208	176,901	13,208	U

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
2037265	Toluene-d8	10.000	9.487	95	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

12.12.06

Level IV / V

Report File Name: 20653606.FS3
Printed on 12/1/2006

Environmental Analytical Service
Page 1 of 1

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206536**
Analytical Method: TO-15 SIM **Laboratory Number: 09**

File: 0653609A.D
Description: MV667
Can/Tube#: 656
Sam_Type: SA
QC_Batch: 111706-MS3
Air Volume: 0.1 ml

Date Sampled: 10/31/06 13:19
Date Received: 11/03/06 10:00
Date Extracted: 11/17/06 17:48
Date Analyzed: 11/17/06 17:48
Can Dilution Factor: 1.48
Not Detected Flag: U

1

very qual qual code

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL [1] ug/m3	RL ug/m3	Amount ug/m3	Flag
75014	Vinyl chloride	28.1	148.0	28.1	74.2	390.6 ~~390.6~~	~~74.2~~	U U
75354	1,1-Dichloroethene	17.8	148.0	17.8	72.7	605.6 ~~605.6~~	~~72.7~~	U
156605	trans-1,2-Dichloroethene	79.9	636.4	79.9	327.2	2,605.3 ~~2605.3~~	~~327.2~~	U
156592	cis-1,2-Dichloroethene	125.8	769.6	562.2	514.8	3,149.3	2,300.5	J J
79016	Trichloroethene	11.8	769.6	28,589.5	65.5	4,257.5	158,159.6	
127184	Tetrachloroethene	118.4	754.8	181.9	830.0	5,291.3	1,275.3	J J

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
2037265	Toluene-d8	0.200	0.174	87	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 12-12-06 Level III/IV

Report File Name: 20653609.MS3
Printed on 12/4/2006

Environmental Analytical Service
Page 1 of 1

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206536**
Analytical Method: TO-15 SIM **Laboratory Number: 10**

File: 0653610A.D
Description: MV668
Can/Tube#: 786
Sam_Type: SA
QC_Batch: 112906-MS1
Air Volume: 0.5 ml

Date Sampled: 10/31/06 15:09
Date Received: 11/03/06 10:00
Date Extracted: 11/29/06 16:32
Date Analyzed: 11/29/06 16:32
Can Dilution Factor: 1.53
Not Detected Flag: U

2 very qual qual code

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75014	Vinyl chloride	5.81	159.12	5.81	15.35	419.97	15.35	U
75354	1,1-Dichloroethene	3.67	159.12	18.05	15.03	651.13	73.85	J
156605	trans-1,2-Dichloroethene	16.52	131.58	34.92	67.65	538.66	142.97	J
156592	cis-1,2-Dichloroethene	26.01	159.12	90.25	106.43	651.13	369.32	J
79016	Trichloroethene	2.45	159.12	1,515.14	13.54	880.27	8,381.89	
127184	Tetrachloroethene	24.48	156.06	24.48	171.61	1,094.00	171.61	U

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
2037265	Toluene-d8	0.200	0.178	89	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 12.12.06

Level IV

Report File Name: 20653610.MS1
Printed on 12/3/2006

Environmental Analytical Service
Page 1 of 1

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206536**
Analytical Method: TO-15 SIM **Laboratory Number: 08**

File: 0653608A.D
Description: MV669
Can/Tube#: 160
Sam_Type: SA
QC_Batch: 111606-MS3
Air Volume: 0.1 ml

Date Sampled: 10/31/06 10:11
Date Received: 11/03/06 10:00
Date Extracted: 11/16/06 21:22
Date Analyzed: 11/16/06 21:22
Can Dilution Factor: 1.62
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75014	Vinyl chloride	31	162	31	81	428	81	U
75354	1,1-Dichloroethene	19	162	19	80	663	80	U
156605	trans-1,2-Dichloroethene	87	697	7,812	358	2,852	31,981	
156592	cis-1,2-Dichloroethene	138	842	31,172	563	3,447	127,558	E
79016	Trichloroethene	13	842	510,313	72	4,660	2,823,102	E
127184	Tetrachloroethene	130	826	434	909	5,792	3,039	J

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
2037265	Toluene-d8	0.200	0.179	90	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

Report File Name: 20653608.MS3
Printed on 11/29/2006

Environmental Analytical Service

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Full Scan GC/MS **SDG: 206536**
Analytical Method: TO-15 **Laboratory Number: 08**

File: 0653608A.D
Description: MV669
Can/Tube#: 160
Sam_Type: SA
QC_Batch: 113006-MS1
Air Volume: 0.05 ml

Date Sampled: 10/31/06 10:11
Date Received: 11/03/06 10:00
Date Extracted: 11/30/06 12:56
Date Analyzed: 11/30/06 12:56
Can Dilution Factor: 1.62
Not Detected Flag: U

0

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75014	Vinyl chloride	2,745	16,524	2,745	7,244	43,613	7,244	U
75354	1,1-Dichloroethene	1,920	16,848	1,920	7,856	68,943	7,856	U
156605	trans-1,2-Dichloroethene	1,688	14,256	6,597	6,909	58,361	27,007	J
156592	cis-1,2-Dichloroethene	886	16,686	25,540	3,625	68,280	104,513	
79016	Trichloroethene	709	16,686	438,502	3,922	92,309	2,425,833	
127184	Tetrachloroethene	1,246	16,686	1,246	8,733	116,971	8,733	U

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
2037265	Toluene-d8	10.000	9.916	99	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

MC 12-12-06

Level IV/V

Report File Name: 20653608.FS1
Printed on 12/3/2006

Environmental Analytical Service
Page 1 of 1

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 SIM GC/MS **SDG: 206536**
Analytical Method: TO-15 SIM **Laboratory Number: 13**

File: 0653613A.D
Description: MV670
Can/Tube#: 167
Sam_Type: SA
QC_Batch: 112906-MS1
Air Volume: 0.5 ml

Date Sampled: 11/01/06 7:59
Date Received: 11/03/06 10:00
Date Extracted: 11/29/06 18:53
Date Analyzed: 11/29/06 18:53
Can Dilution Factor: 1.40
Not Detected Flag: U

CAS#	Compound	MDL ppbv	RL ppbv	Amount ppbv	MDL ug/m3	RL ug/m3	Amount ug/m3	Flag
75014	Vinyl chloride	5.32	145.60	5.32	14.04	384.29	14.04	U
75354	1,1-Dichloroethene	3.36	145.60	17.20	13.75	595.80	70.39	J
156605	trans-1,2-Dichloroethene	15.12	120.40	15.12	61.90	492.89	61.90	U
156592	cis-1,2-Dichloroethene	23.80	145.60	23.80	97.39	595.80	97.39	U
79016	Trichloroethene	2.24	145.60	285.70	12.39	805.47	1,580.49	
127184	Tetrachloroethene	22.40	142.80	22.40	157.03	1,001.05	157.03	U

	Surrogate Recovery	Spike Amt. ppbV	Amount ppbV	% Rec.	QC Limits	Flag * = Out
2037265	Toluene-d8	0.200	0.171	86	70-130	

Notes: 1) Reported results are to be interpreted to two significant figures.
2) ug/m3 = ppbV*FW/23.68 calculated assuming conditions at 60 F and 1 atm.
3) MDL and RL are adjusted for sample volume and can dilution.
4) U and ND are Flags used for Not Detected
5) J is a flag for a result between the MDL and the RL (or lower quantitation limit, LQL)

12-12-06

Level IV/V

Appendix E

(Electronic)

Neutron Logs

COLOG

BOREHOLE GEOPHYSICS
HYDROPHYSICS

A DIVISION OF LAYNE CHRISTENSEN COMPANY

11001 ETIWANDA AVE. FONTANA
CA 92337
Ph. (909) 390-2833 Fax (909) 390-6097

BOEING

NEUTRON

ROBERTSON GEOLOGGING TECHNOLOGY

REMARKS (C:\RGWinlogger\Data\BOEING NEUTRON LOGS\..

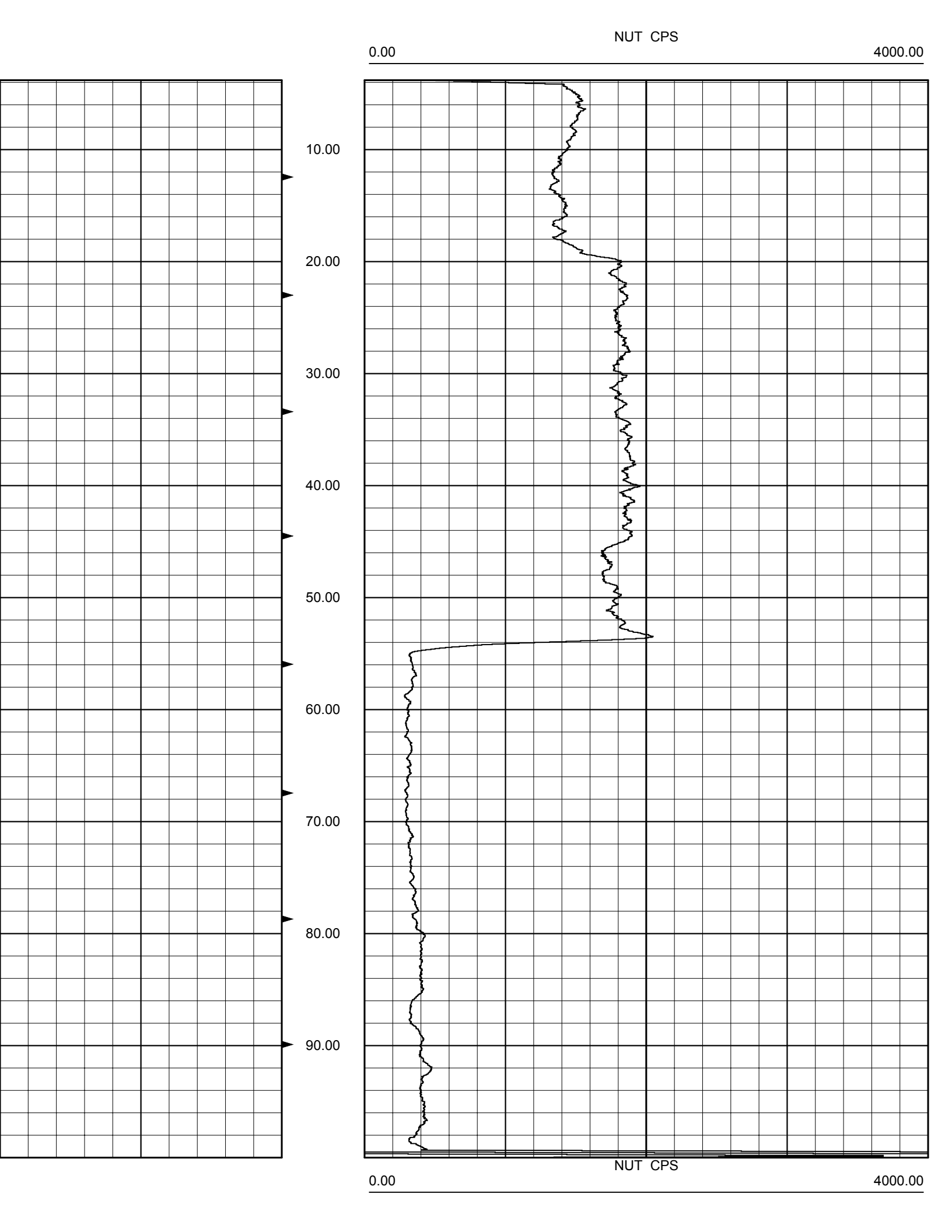
COMPANY	MWH
WELL	RD-92
FIELD	CHATSWORTH
COUNTRY	USA
STATE	CALIFORNIA
COUNTY	LOS ANGELES
LAT.:	
LONG.:	

OTHER SERVICES

Perm. Da..	GROUND ..	Elev	KB 0.00
Log. Datum	GROUND ..		DF 0.00
Drill Datum	GROUND ..		GL 0.00

DATE	18 Jul 06	18 Jul 06	18 Jul 06
RUN#	1	0	0
TYPE OF LOG	NEUTRON		
DEPTH DRILLER	110.00	0.00	0.00
DEPTH LOGGER	100.00	0.00	0.00
LOG DEEPEST	108.00	0.00	0.00
LOG SHALLOW	5.00	0.00	0.00
FLUID IN HOLE	WATER		
SALINITY			
DENSITY			
LEVEL			
MAX TEMP °C	0.00	0.00	0.00
RIG TIME			
RECORDED BY	J. ABREAU		
WITNESSED BY	E. VANDERVE..	0	

RUN#	BIT RECORD SIZE	FROM	TO	CASING RECORD SIZE	WEIGHT	FROM	TO
1	0.00	0.00	0.00	2.00	0.30	0.00	110.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00


NUT CPS
0.00
4000.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
NUT CPS
0.00
4000.00

COLOG

BOREHOLE GEOPHYSICS
HYDROPHYSICS

A DIVISION OF LAYNE CHRISTENSEN COMPANY

11001 ETIWANDA AVE. FONTANA
CA 92337
Ph. (909) 390-2833 Fax (909) 390-6097

BOEING

NEUTRON

ROBERTSON GEOLOGGING TECHNOLOGY

REMARKS (C:\RGWinlogger\Data\BOEING NEUTRON LOGS\..

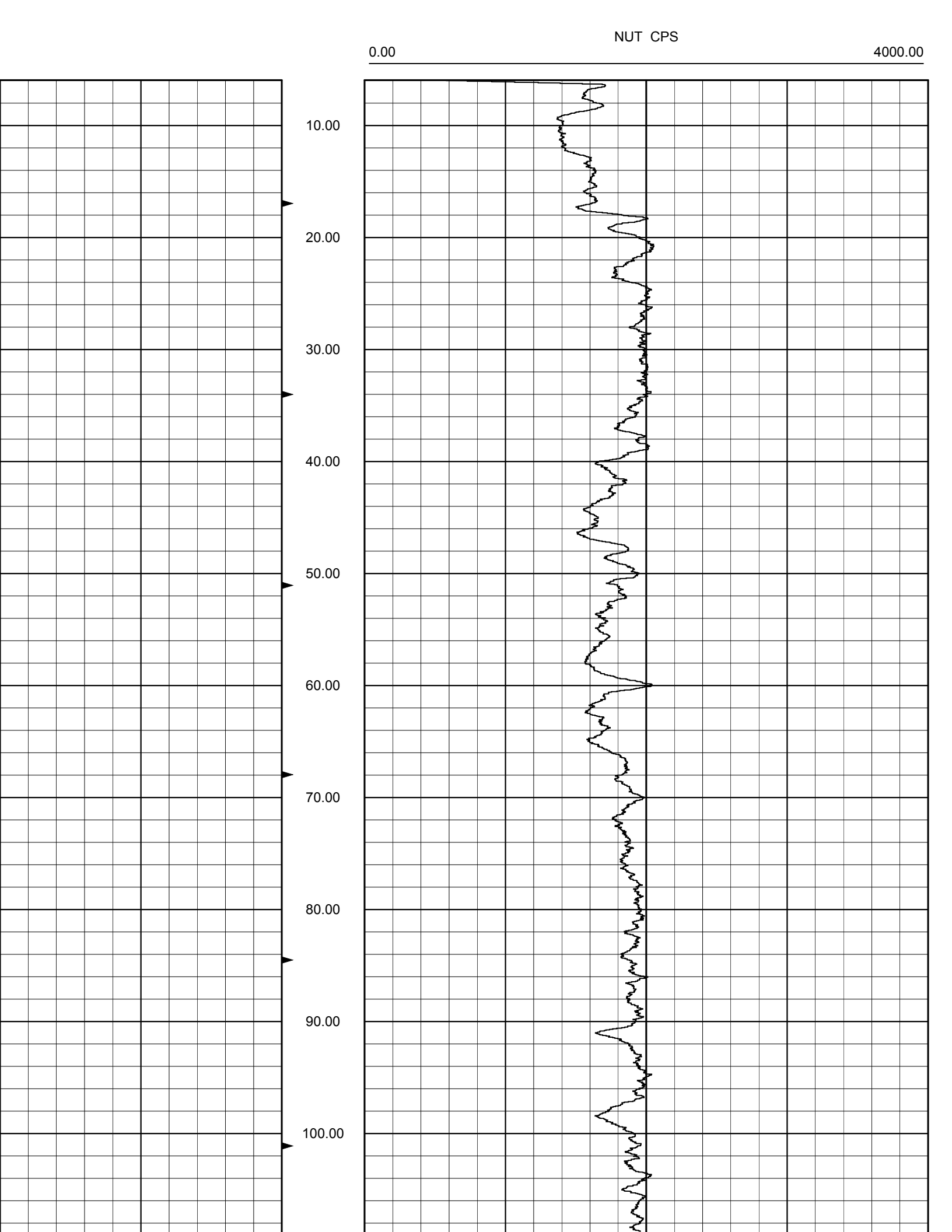
COMPANY	MWH
WELL	RD-52A
FIELD	CHATSWORTH
COUNTRY	USA
STATE	CALIFORNIA
COUNTY	LOS ANGELES
LAT.:	
LONG.:	

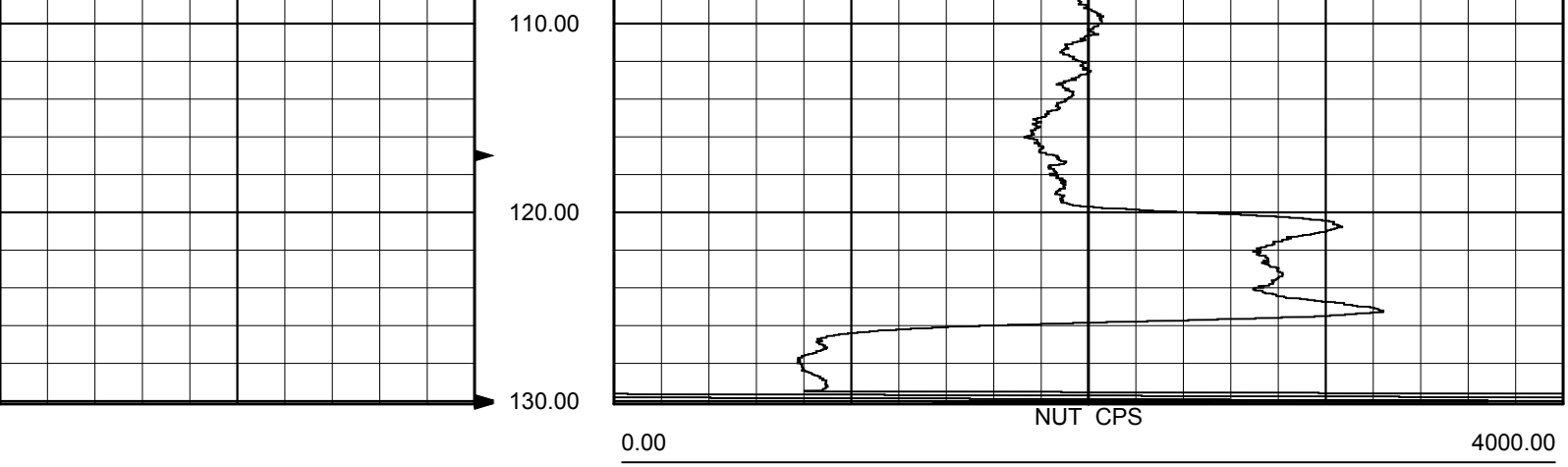
OTHER SERVICES

Perm. Da..	GROUND ..	Elev	KB 0.00
Log. Datum	GROUND ..		DF 0.00
Drill Datum	GROUND ..		GL 0.00

DATE	18 Jul 06	18 Jul 06	18 Jul 06
RUN#	1	0	0
TYPE OF LOG	NEUTRON		
DEPTH DRILLER	127.00	0.00	0.00
DEPTH LOGGER	127.00	0.00	0.00
LOG DEEPEST	127.00	0.00	0.00
LOG SHALLOW	5.00	0.00	0.00
FLUID IN HOLE	WATER		
SALINITY			
DENSITY			
LEVEL			
MAX TEMP °C	0.00	0.00	0.00
RIG TIME			
RECORDED BY	J. ABREAU		
WITNESSED BY	E. VANDERVE..	0	

RUN#	BIT RECORD SIZE	FROM	TO	CASING RECORD SIZE	WEIGHT	FROM	TO
1	0.00	0.00	0.00	2.00	0.30	0.00	130.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00


NUT CPS
0.00
4000.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
100.00


110.00
120.00
130.00
NUT CPS
0.00
4000.00

COLOG

BOREHOLE GEOPHYSICS
HYDROPHYSICS

A DIVISION OF LAYNE CHRISTENSEN COMPANY

11001 ETIWANDA AVE. FONTANA
CA 92337
Ph. (909) 390-2833 Fax (909) 390-6097

BOEING

NEUTRON

ROBERTSON GEOLOGGING TECHNOLOGY

REMARKS (C:\RGWinlogger\Data\BOEING NEUTRON LOGS\..

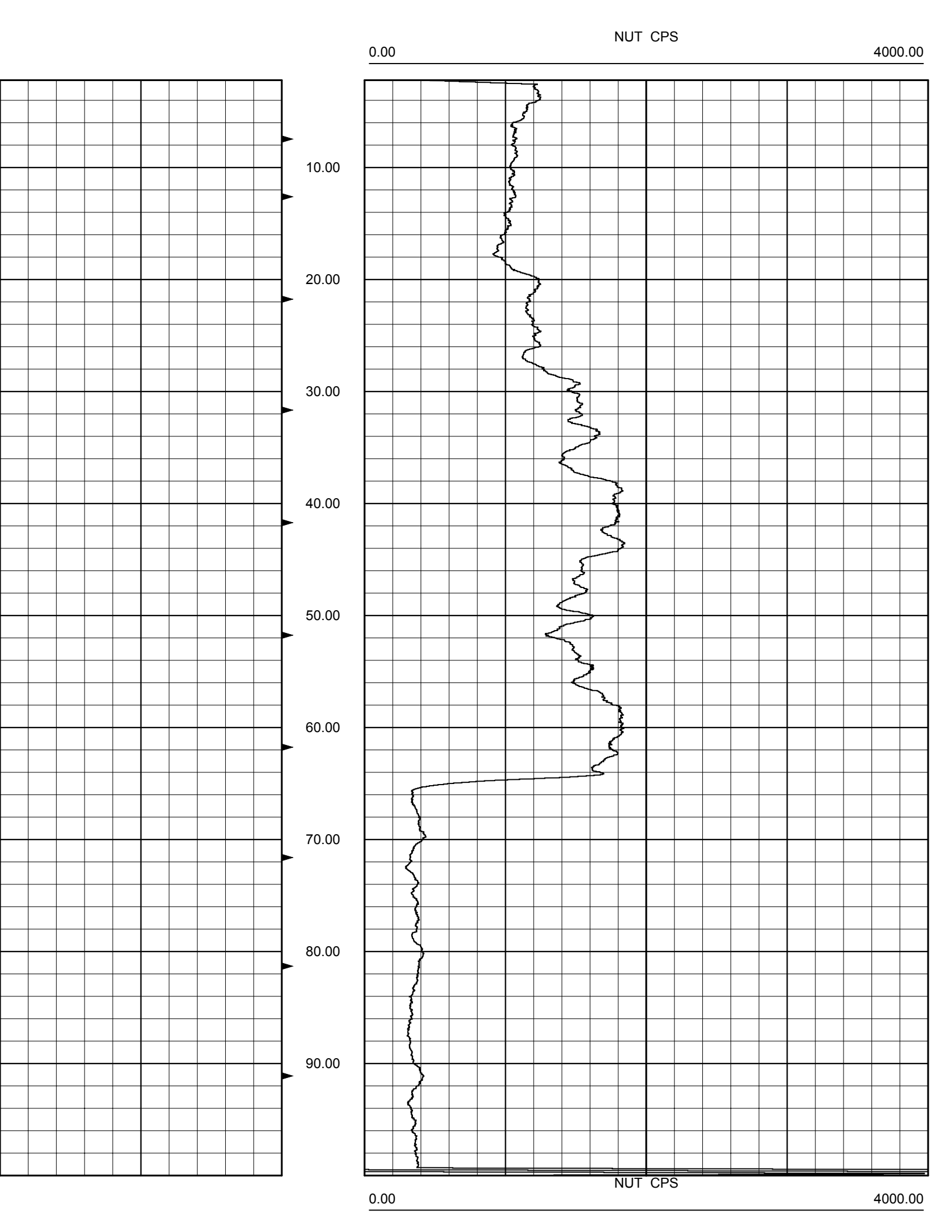
COMPANY	MWH
WELL	RD-46A
FIELD	CHATSWORTH
COUNTRY	USA
STATE	CALIFORNIA
COUNTY	LOS ANGELES
LAT.:	
LONG.:	

OTHER SERVICES

Perm. Da..	GROUND ..	Elev	KB 0.00
Log. Datum	GROUND ..		DF 0.00
Drill Datum	GROUND ..		GL 0.00

DATE	18 Jul 06	18 Jul 06	18 Jul 06
RUN#	1	0	0
TYPE OF LOG	NEUTRON		
DEPTH DRILLER	100.00	0.00	0.00
DEPTH LOGGER	100.00	0.00	0.00
LOG DEEPEST	100.00	0.00	0.00
LOG SHALLOW	5.00	0.00	0.00
FLUID IN HOLE	WATER		
SALINITY			
DENSITY			
LEVEL			
MAX TEMP °C	0.00	0.00	0.00
RIG TIME			
RECORDED BY	J. ABREAU		
WITNESSED BY	E. VANDERVE..	0	

RUN#	BIT RECORD SIZE	FROM	TO	CASING RECORD SIZE	WEIGHT	FROM	TO
1	0.00	0.00	0.00	2.00	0.30	0.00	110.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00


NUT CPS
0.00
4000.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
NUT CPS
0.00
4000.00

Depth: 2.00 ft Date: 18 Jul 2006 Time: 14:58:17 File: "C:\RGWinlogger\DATA\BOEING RD-46A.LOG"

COLOG

BOREHOLE GEOPHYSICS
HYDROPHYSICS

A DIVISION OF LAYNE CHRISTENSEN COMPANY

11001 ETIWANDA AVE. FONTANA
CA 92337
Ph. (909) 390-2833 Fax (909) 390-6097

BOEING

NEUTRON

ROBERTSON GEOLOGGING TECHNOLOGY

REMARKS (C:\RGWinlogger\Data\BOEING NEUTRON LOGS\..

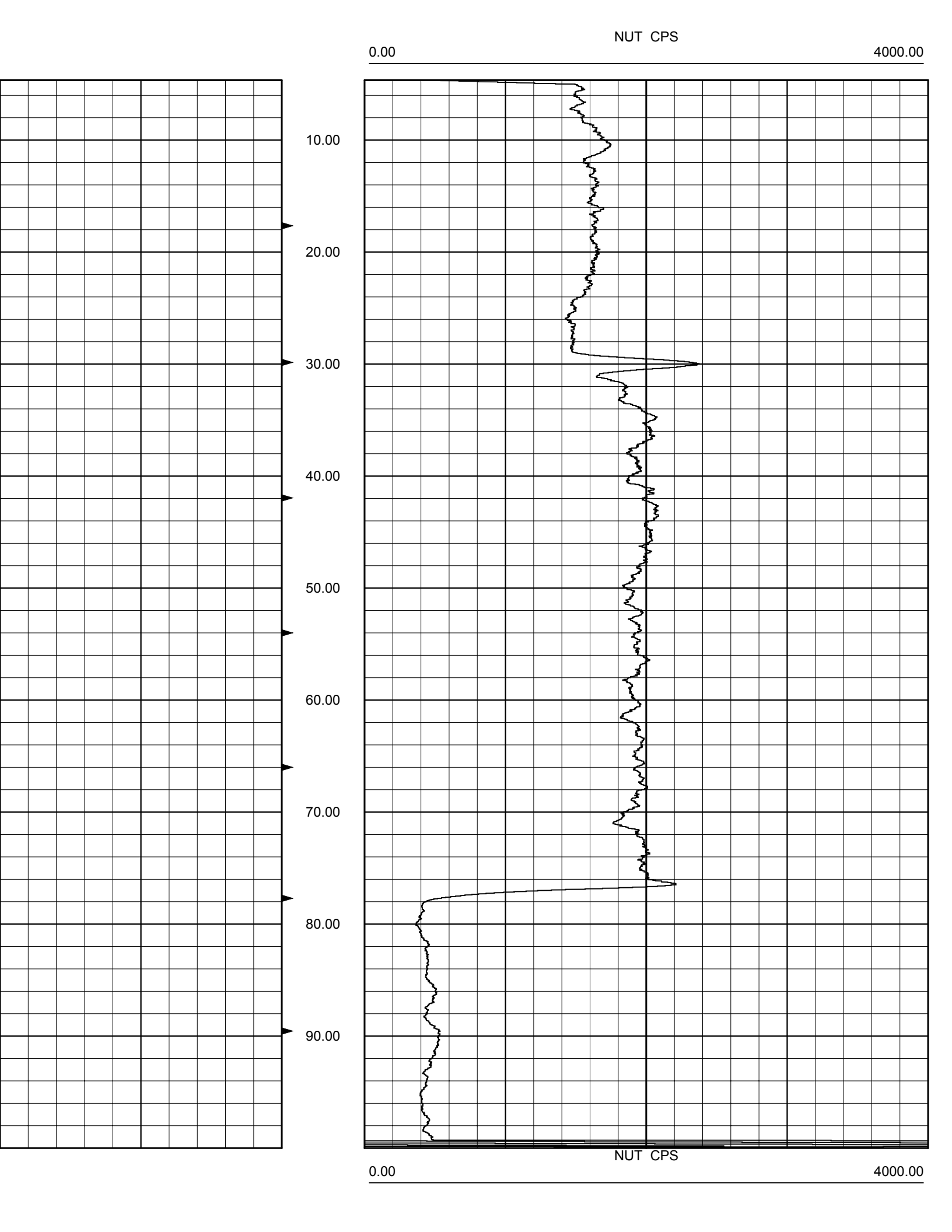
COMPANY	MWH
WELL	RD-5A
FIELD	CHATSWORTH
COUNTRY	USA
STATE	CALIFORNIA
COUNTY	LOS ANGELES
LAT.:	
LONG.:	

OTHER SERVICES

Perm. Da..	GROUND ..	Elev	KB 0.00
Log. Datum	GROUND ..		DF 0.00
Drill Datum	GROUND ..		GL 0.00

DATE	18 Jul 06	18 Jul 06	18 Jul 06
RUN#	1	0	0
TYPE OF LOG	NEUTRON		
DEPTH DRILLER	100.00	0.00	0.00
DEPTH LOGGER	100.00	0.00	0.00
LOG DEEPEST	100.00	0.00	0.00
LOG SHALLOW	5.00	0.00	0.00
FLUID IN HOLE	WATER		
SALINITY			
DENSITY			
LEVEL			
MAX TEMP °C	0.00	0.00	0.00
RIG TIME			
RECORDED BY	J. ABREAU		
WITNESSED BY	E. VANDERVE..	0	

RUN#	BIT RECORD SIZE	FROM	TO	CASING RECORD SIZE	WEIGHT	FROM	TO
1	0.00	0.00	0.00	2.00	0.30	0.00	110.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00


NUT CPS
0.00
4000.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
NUT CPS
0.00
4000.00

Depth: 4.00 ft Date: 18 Jul 2006 Time: 14:17:34 File: "C:\RGWinlogger\DATA\BOEING RD-5A NEUTRON.LOG"

COLOG

BOREHOLE GEOPHYSICS
HYDROPHYSICS

A DIVISION OF LAYNE CHRISTENSEN COMPANY

11001 ETIWANDA AVE. FONTANA
CA 92337
Ph. (909) 390-2833 Fax (909) 390-6097

BOEING

NEUTRON

ROBERTSON GEOLOGGING TECHNOLOGY

REMARKS (C:\RGWinlogger\Data\BOEING NEUTRON LOGS\..

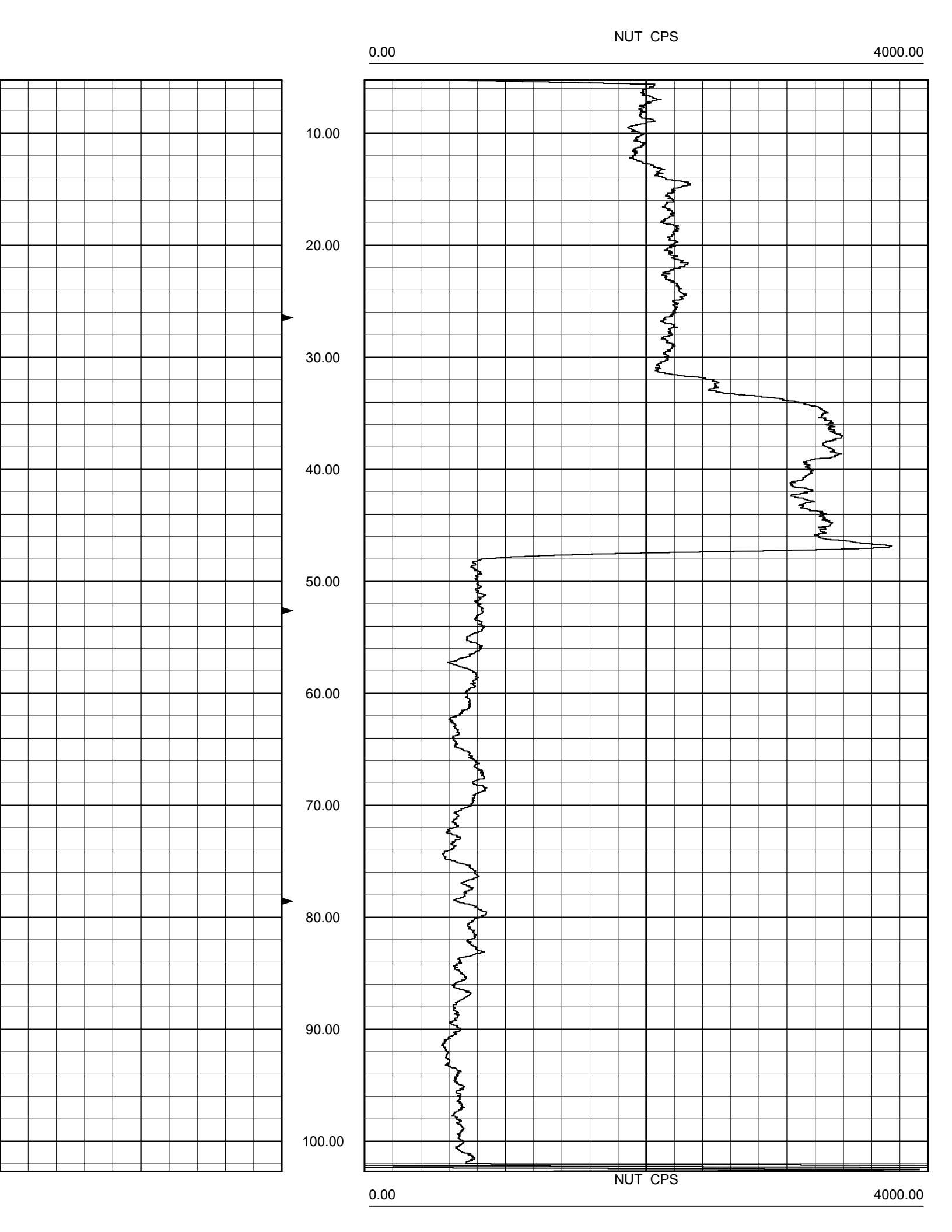
COMPANY	BOEING
WELL	HAR-7
FIELD	CHATSWORTH
COUNTRY	USA
STATE	CALIFORNIA
COUNTY	LOS ANGELES
LAT.:	
LONG.:	

OTHER SERVICES

Perm. Da..	GROUND ..	Elev	KB 0.00
Log. Datum	GROUND ..		DF 0.00
Drill Datum	GROUND ..		GL 0.00

DATE	03 Aug 06	18 Jul 06	18 Jul 06
RUN#	1	0	0
TYPE OF LOG	NEUTRON		
DEPTH DRILLER	102.00	0.00	0.00
DEPTH LOGGER	102.00	0.00	0.00
LOG DEEPEST	102.00	0.00	0.00
LOG SHALLOW	5.00	0.00	0.00
FLUID IN HOLE	WATER		
SALINITY			
DENSITY			
LEVEL			
MAX TEMP °C	0.00	0.00	0.00
RIG TIME			
RECORDED BY	J. ABREAU		
WITNESSED BY	E. VANDERVE..	0	

RUN#	BIT RECORD SIZE	FROM	TO	CASING RECORD SIZE	WEIGHT	FROM	TO
1	0.00	0.00	0.00	3.00	0.30	0.00	108.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00


NUT CPS
0.00
4000.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
100.00
NUT CPS
0.00
4000.00

Depth: 5.00 ft Date: 03 Aug 2006 Time: 13:43:34 File: "C:\RGWinlogger\DATA\BOEING HAR-7 NEUTRON.LOG"

COLOG

BOREHOLE GEOPHYSICS
HYDROPHYSICS

A DIVISION OF LAYNE CHRISTENSEN COMPANY

11001 ETIWANDA AVE. FONTANA
CA 92337
Ph. (909) 390-2833 Fax (909) 390-6097

BOEING

NEUTRON

ROBERTSON GEOLOGGING TECHNOLOGY

REMARKS (C:\RGWinlogger\Data\BOEING NEUTRON LOGS\..

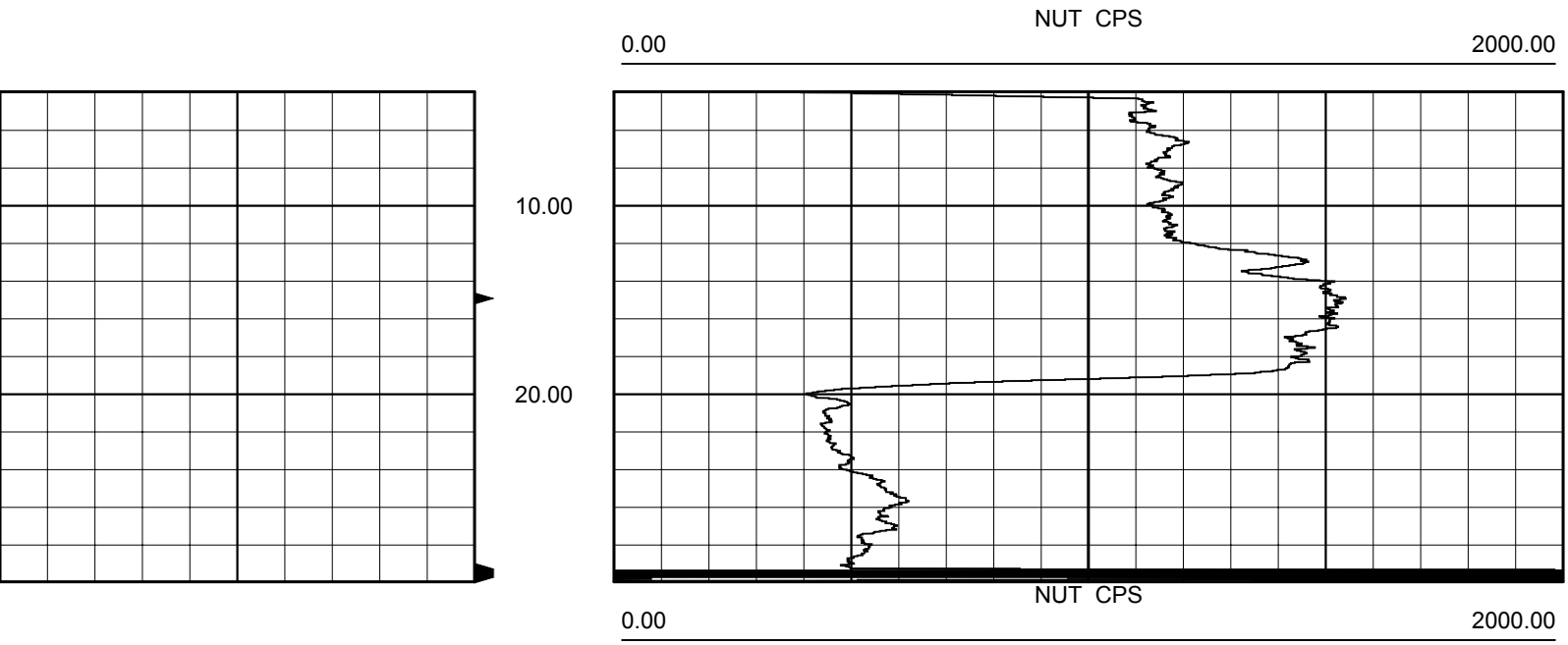
COMPANY	BOEING
WELL	ES-24
FIELD	CHATSWORTH
COUNTRY	USA
STATE	CALIFORNIA
COUNTY	LOS ANGELES
LAT.:	
LONG.:	

OTHER SERVICES

Perm. Da..	GROUND ..	Elev	KB 0.00
Log. Datum	GROUND ..		DF 0.00
Drill Datum	GROUND ..		GL 0.00

DATE	03 Aug 06	18 Jul 06	18 Jul 06
RUN#	1	0	0
TYPE OF LOG	NEUTRON		
DEPTH DRILLER	30.00	0.00	0.00
DEPTH LOGGER	30.00	0.00	0.00
LOG DEEPEST	30.00	0.00	0.00
LOG SHALLOW	5.00	0.00	0.00
FLUID IN HOLE	WATER		
SALINITY			
DENSITY			
LEVEL			
MAX TEMP °C	0.00	0.00	0.00
RIG TIME			
RECORDED BY	J. ABREAU		
WITNESSED BY	E. VANDERVE..	0	

RUN#	BIT RECORD SIZE	BIT RECORD FROM	BIT RECORD TO	CASING RECORD SIZE	CASING RECORD WEIGHT	CASING RECORD FROM	CASING RECORD TO
1	0.00	0.00	0.00	3.00	0.30	0.00	108.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00



Depth: 3.00 ft Date: 03 Aug 2006 Time: 13:15:03 File: "C:\RGWinlogger\DATA\BOEING ES-24 NEUTRON.LOG"

COLOG

BOREHOLE GEOPHYSICS
HYDROPHYSICS

A DIVISION OF LAYNE CHRISTENSEN COMPANY

11001 ETIWANDA AVE. FONTANA
CA 92337
Ph. (909) 390-2833 Fax (909) 390-6097

BOEING

NEUTRON

ROBERTSON GEOLOGGING TECHNOLOGY

REMARKS (C:\RGWinlogger\Data\BOEING NEUTRON LOGS\..

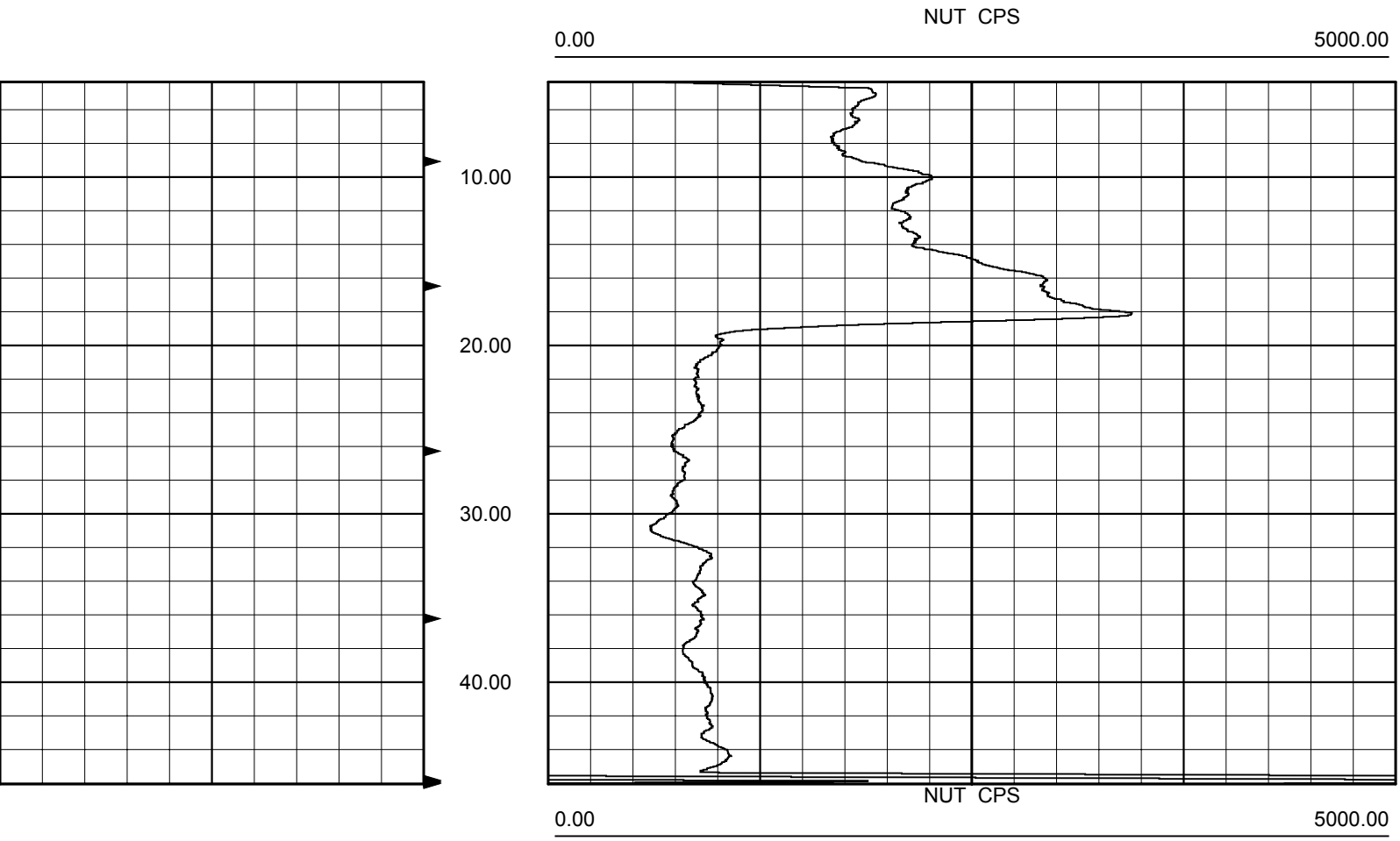
COMPANY	BOEING
WELL	RS-54
FIELD	CHATSWORTH
COUNTRY	USA
STATE	CALIFORNIA
COUNTY	LOS ANGELES
LAT.:	
LONG.:	

OTHER SERVICES

Perm. Da..	GROUND ..	Elev	KB 0.00
Log. Datum	GROUND ..		DF 0.00
Drill Datum	GROUND ..		GL 0.00

DATE	03 Aug 06	18 Jul 06	18 Jul 06
RUN#	1	0	0
TYPE OF LOG	NEUTRON		
DEPTH DRILLER	46.00	0.00	0.00
DEPTH LOGGER	46.00	0.00	0.00
LOG DEEPEST	46.00	0.00	0.00
LOG SHALLOW	5.00	0.00	0.00
FLUID IN HOLE	WATER		
SALINITY			
DENSITY			
LEVEL			
MAX TEMP °C	0.00	0.00	0.00
RIG TIME			
RECORDED BY	J. ABREAU		
WITNESSED BY	E. VANDERVE..	0	

RUN#	BIT RECORD SIZE	FROM	TO	CASING RECORD SIZE	WEIGHT	FROM	TO
1	0.00	0.00	0.00	3.00	0.30	0.00	108.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00



Depth: 4.00 ft Date: 03 Aug 2006 Time: 12:48:45 File: "C:\RGWinlogger\DATA\BOEING RS-54 NEUTRON.LOG"

COLOG

BOREHOLE GEOPHYSICS
HYDROPHYSICS

A DIVISION OF LAYNE CHRISTENSEN COMPANY

11001 ETIWANDA AVE. FONTANA
CA 92337
Ph. (909) 390-2833 Fax (909) 390-6097

BOEING

NEUTRON

COMPANY	BOEING
WELL	ES-3
FIELD	CHATSWORTH
COUNTRY	USA
STATE	CALIFORNIA
COUNTY	LOS ANGELES
LAT.:	
LONG.:	

OTHER SERVICES

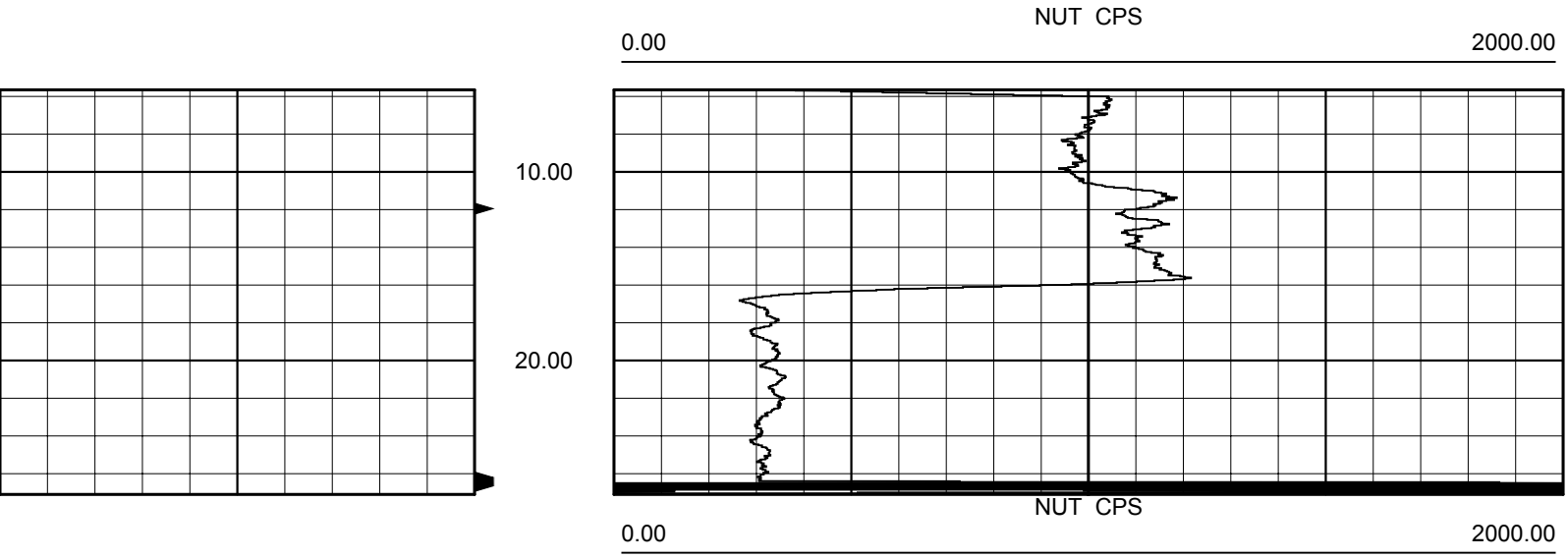
Perm. Da..	GROUND ..	Elev	KB 0.00
Log. Datum	GROUND ..		DF 0.00
Drill Datum	GROUND ..		GL 0.00

DATE	03 Aug 06	18 Jul 06	18 Jul 06
RUN#	1	0	0
TYPE OF LOG	NEUTRON		
DEPTH DRILLER	27.00	0.00	0.00
DEPTH LOGGER	27.00	0.00	0.00
LOG DEEPEST	27.00	0.00	0.00
LOG SHALLOW	5.00	0.00	0.00
FLUID IN HOLE	WATER		
SALINITY			
DENSITY			
LEVEL			
MAX TEMP °C	0.00	0.00	0.00
RIG TIME			
RECORDED BY	J. ABREAU		
WITNESSED BY	E. VANDERVE..	0	

RUN#	BIT RECORD SIZE	BIT RECORD FROM	BIT RECORD TO	CASING RECORD SIZE	CASING RECORD WEIGHT	CASING RECORD FROM	CASING RECORD TO
1	0.00	0.00	0.00	3.00	0.30	0.00	108.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00

ROBERTSON GEOLOGGING TECHNOLOGY

REMARKS (C:\RGWinlogger\Data\BOEING NEUTRON LOGS\..



Depth: 5.00 ft Date: 03 Aug 2006 Time: 14:08:10 File: "C:\RGWinlogger\DATA\BOEING ES-3 NEUTRON.LOG"

COLOG

BOREHOLE GEOPHYSICS
HYDROPHYSICS

A DIVISION OF LAYNE CHRISTENSEN COMPANY

11001 ETIWANDA AVE. FONTANA
CA 92337
Ph. (909) 390-2833 Fax (909) 390-6097

BOEING

NEUTRON

ROBERTSON GEOLOGGING TECHNOLOGY

REMARKS (C:\RGWinlogger\Data\BOEING NEUTRON LOGS\..

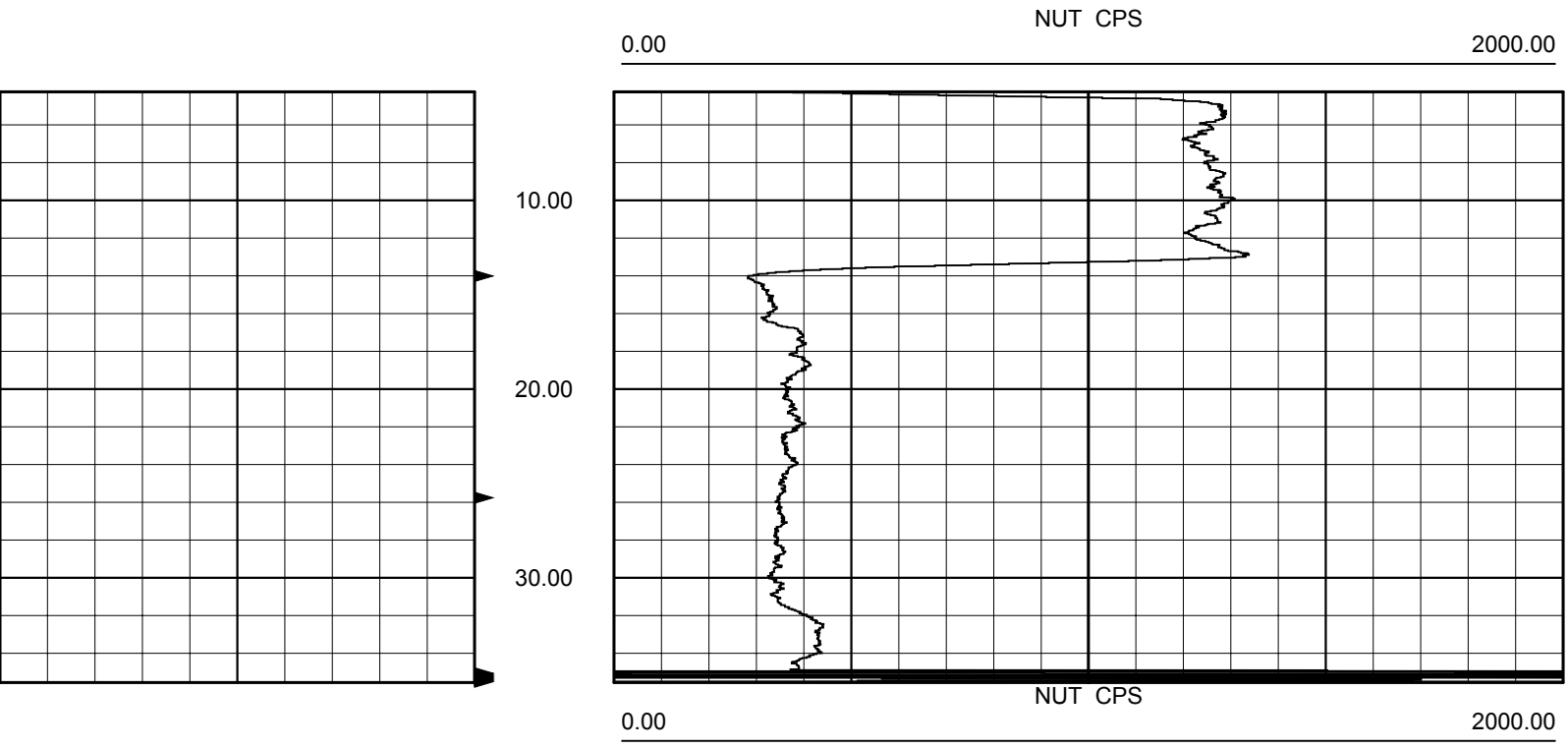
COMPANY	BOEING
WELL	ES-21
FIELD	CHATSWORTH
COUNTRY	USA
STATE	CALIFORNIA
COUNTY	LOS ANGELES
LAT.:	
LONG.:	

OTHER SERVICES

Perm. Da..	GROUND ..	Elev	KB 0.00
Log. Datum	GROUND ..		DF 0.00
Drill Datum	GROUND ..		GL 0.00

DATE	03 Aug 06	18 Jul 06	18 Jul 06
RUN#	1	0	0
TYPE OF LOG	NEUTRON		
DEPTH DRILLER	35.00	0.00	0.00
DEPTH LOGGER	35.00	0.00	0.00
LOG DEEPEST	35.00	0.00	0.00
LOG SHALLOW	5.00	0.00	0.00
FLUID IN HOLE	WATER		
SALINITY			
DENSITY			
LEVEL			
MAX TEMP °C	0.00	0.00	0.00
RIG TIME			
RECORDED BY	J. ABREAU		
WITNESSED BY	E. VANDERVE..	0	

RUN#	BIT RECORD SIZE	FROM	TO	CASING RECORD SIZE	WEIGHT	FROM	TO
1	0.00	0.00	0.00	3.00	0.30	0.00	108.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00

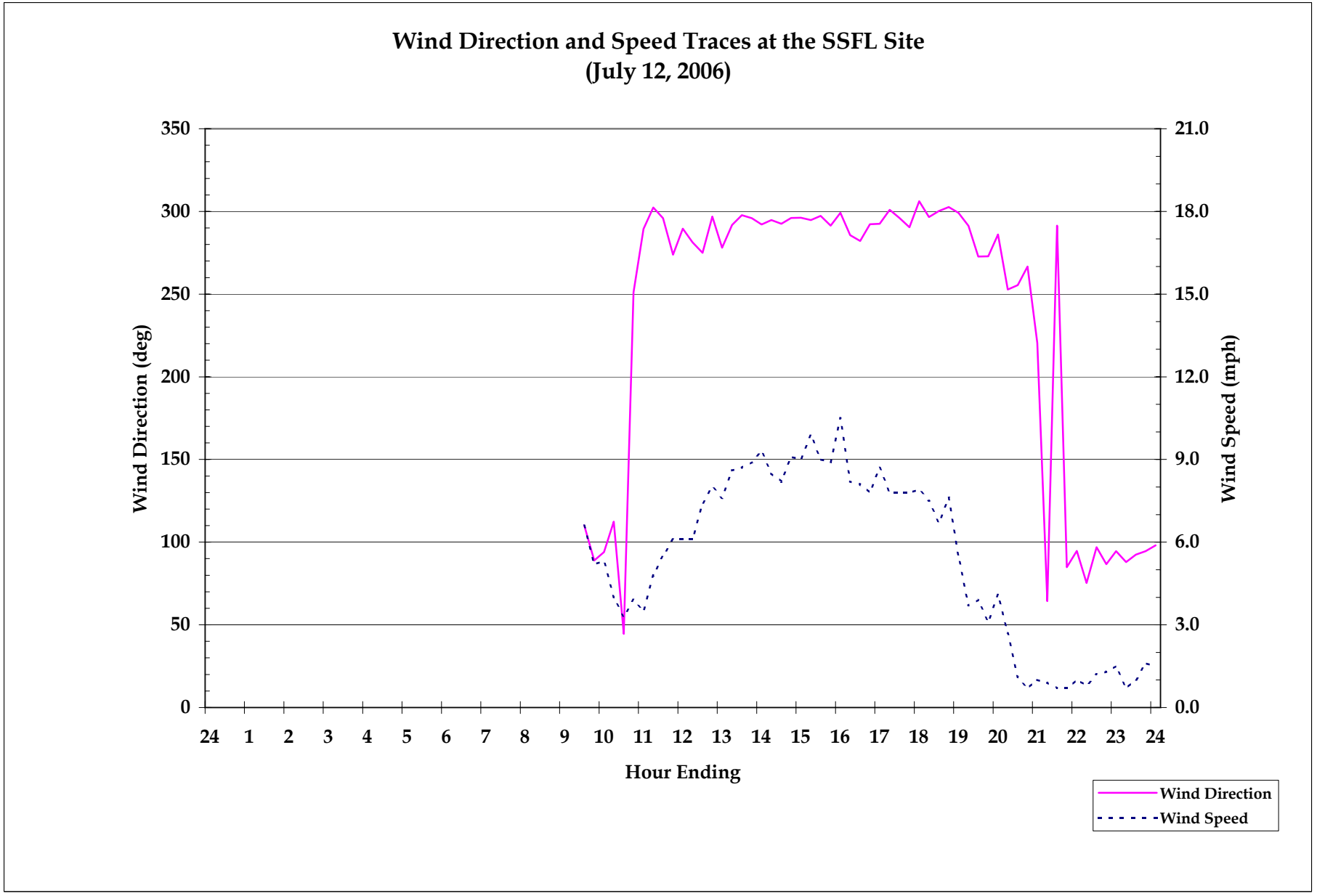


Depth: 4.00 ft Date: 03 Aug 2006 Time: 11:46:56 File: "C:\RGWinlogger\Data\BOEING NEUTRON LOGS\BOEING ES-21 NEUTRON.LOG"

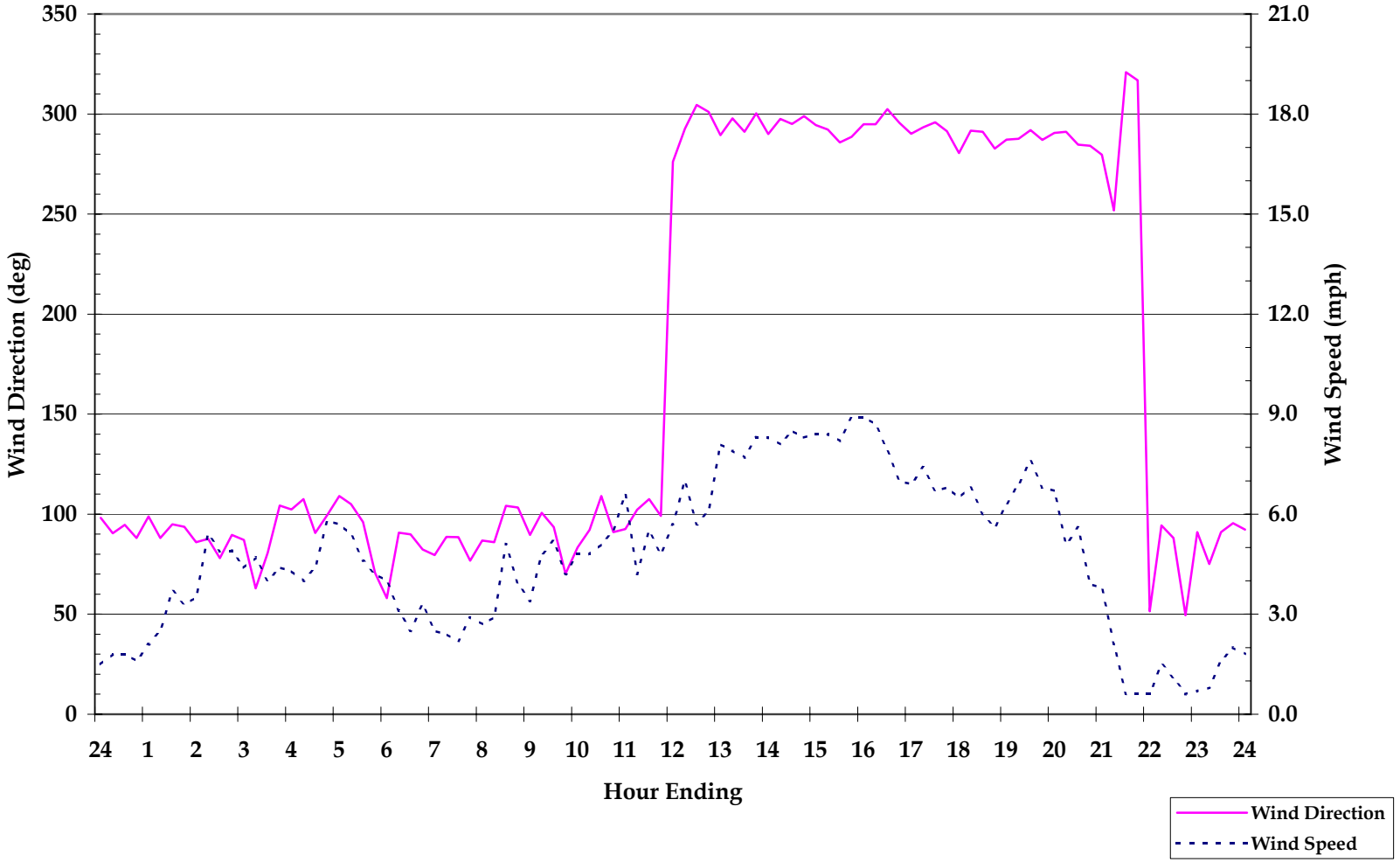
Appendix F

(Electronic)

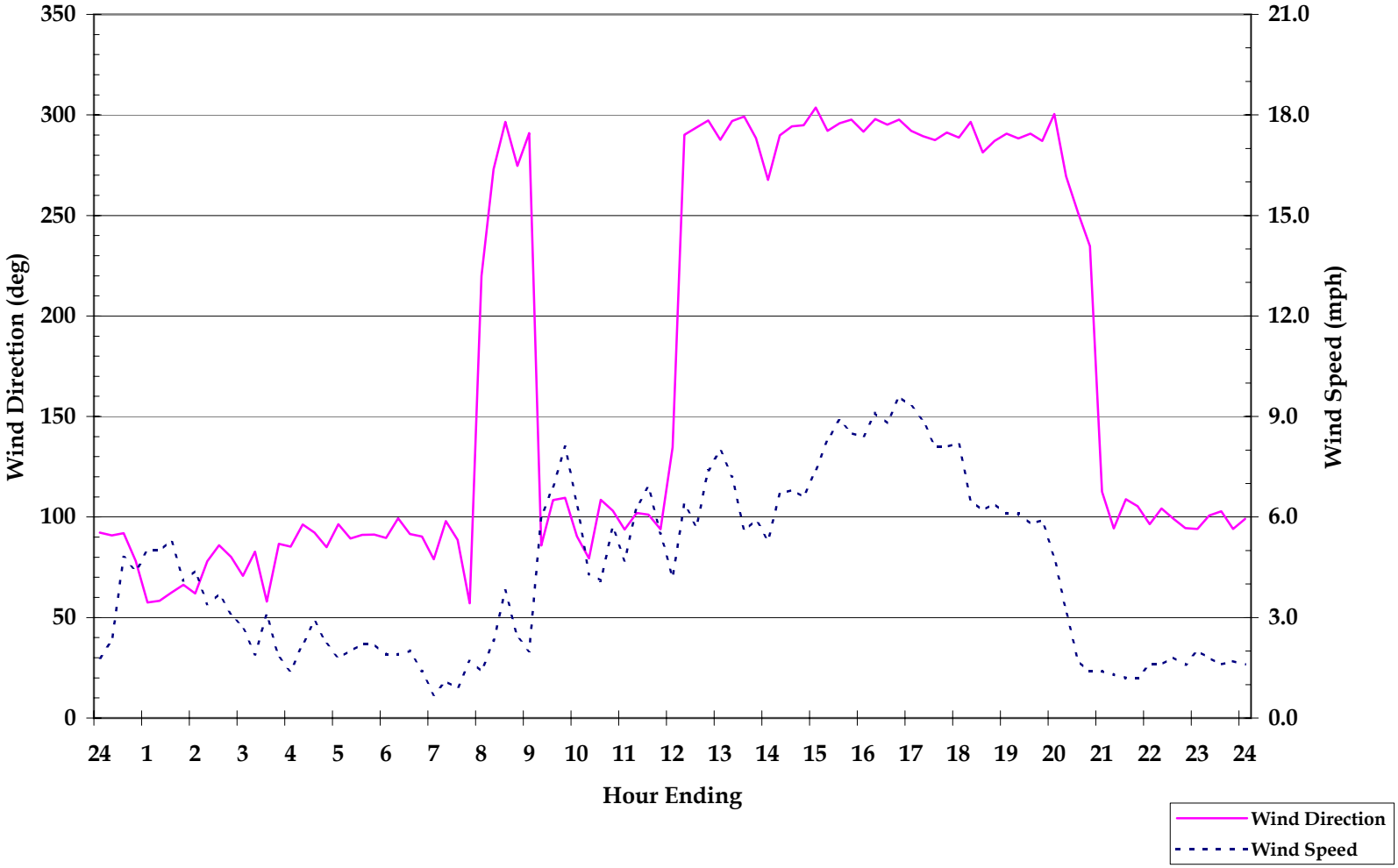
Meteorologic Data


Wind Direction and Speed Traces at the SSFL Site
(July 12, 2006)
Wind Direction (deg)
350
300
250
200
150
100
50
0
Wind Speed (mph)
21.0
18.0
15.0
12.0
9.0
6.0
3.0
0.0
24 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Hour Ending
Wind Direction
Wind Speed

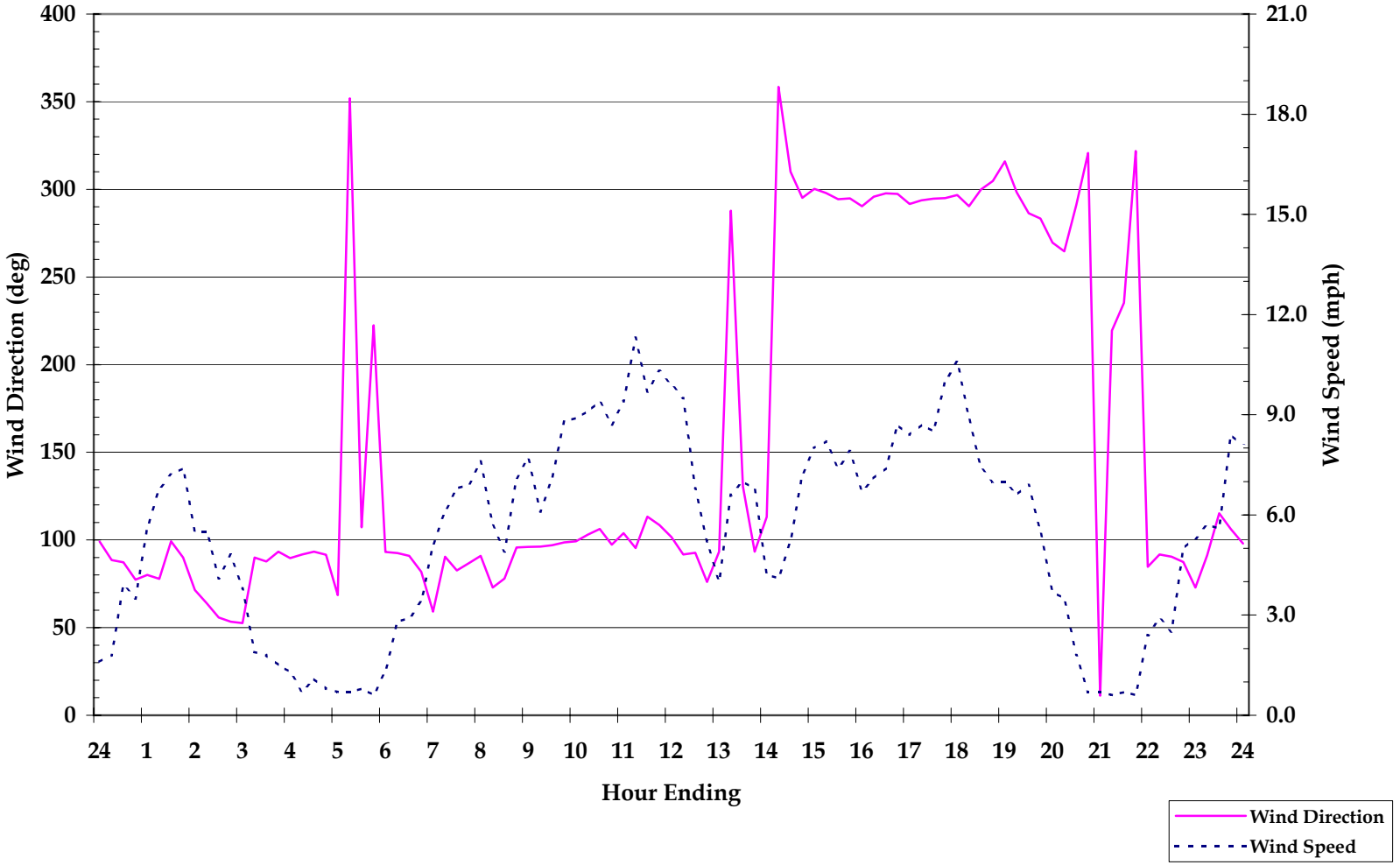
Wind Direction and Speed Traces at the SSFL Site
(July 13, 2006)



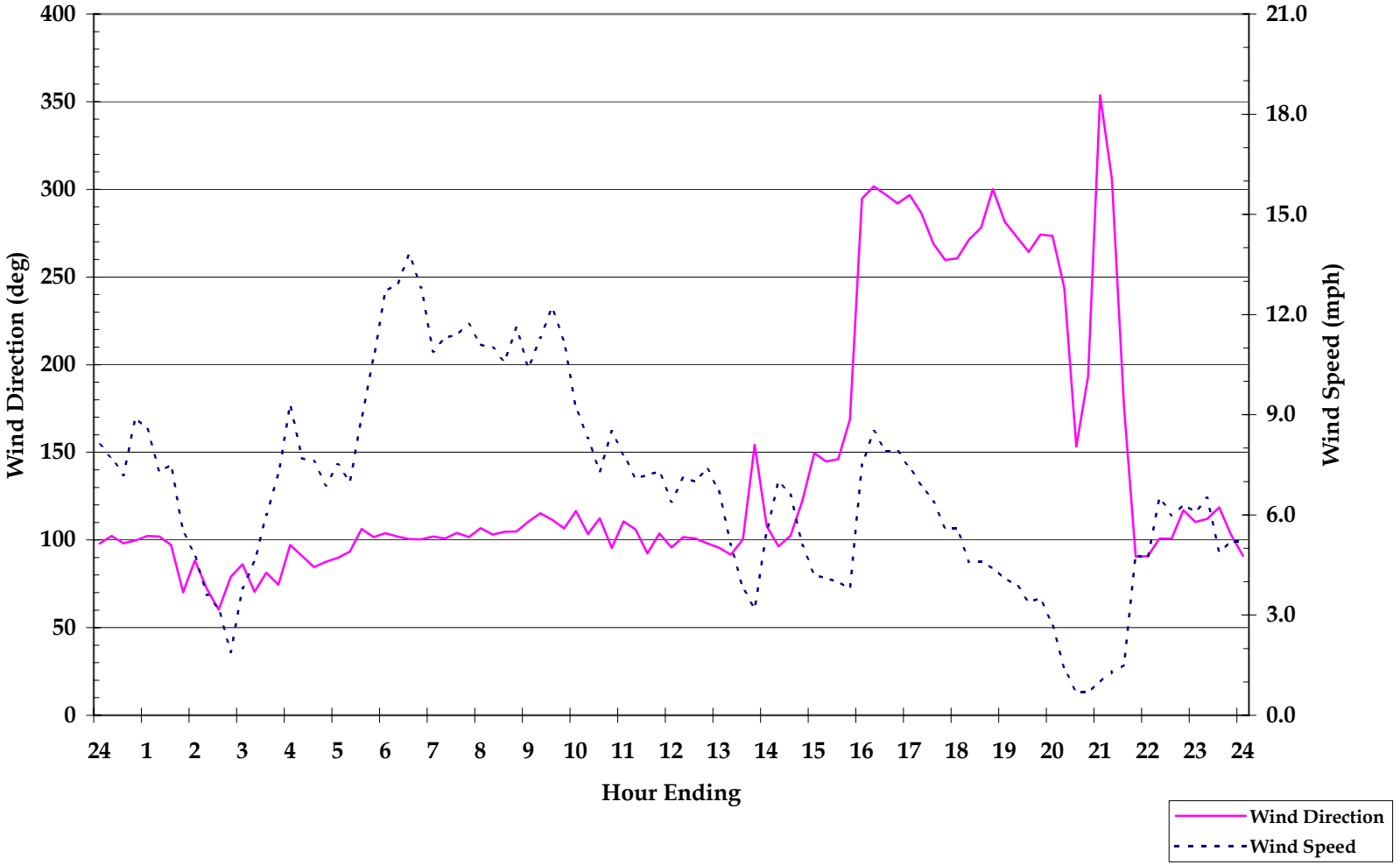
Wind Direction and Speed Traces at the SSFL Site
(July 14, 2006)



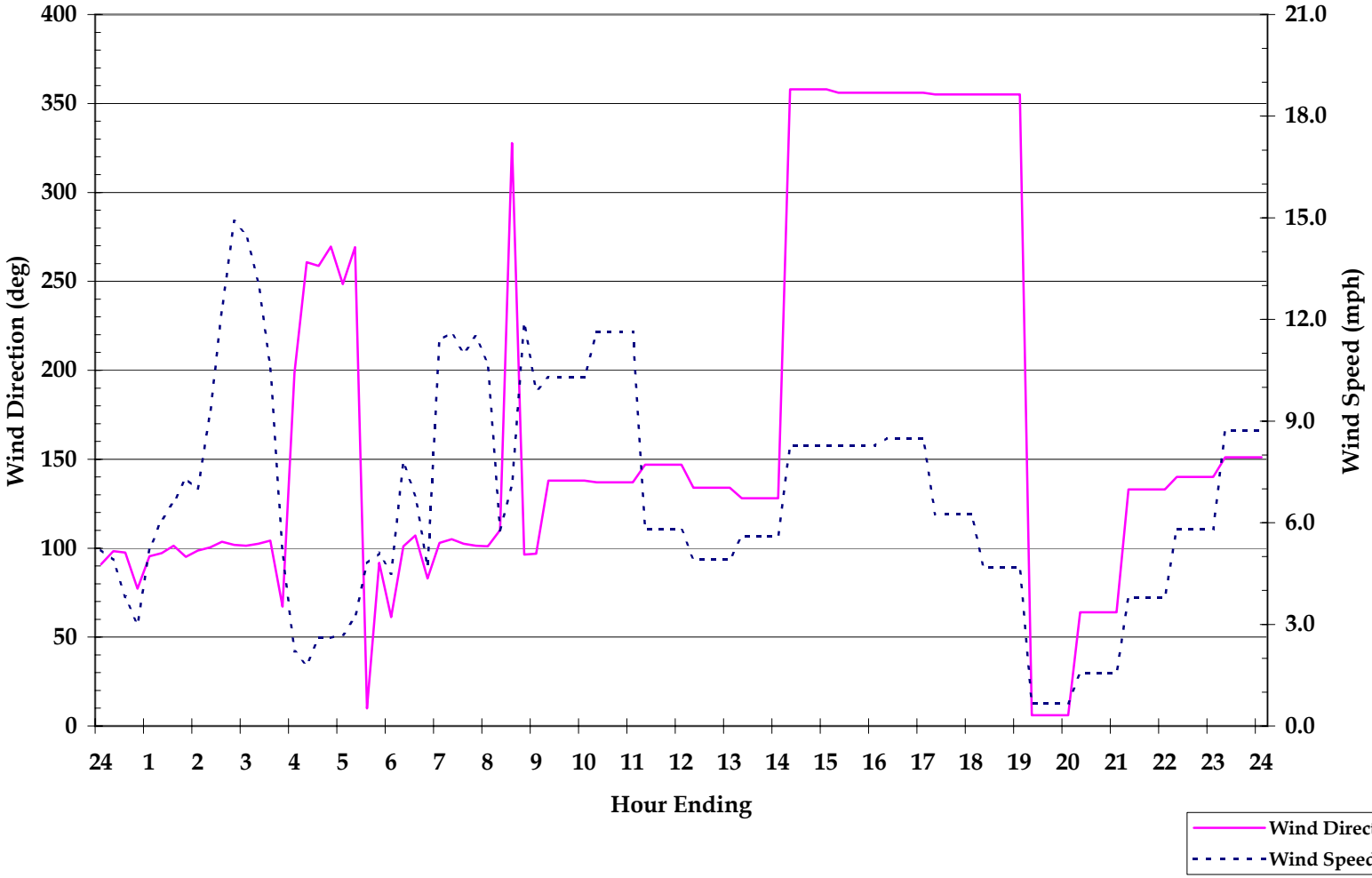
Wind Direction and Speed Traces at the SSFL Site
(July 15, 2006)



Wind Direction and Speed Traces at the SSFL Site
(July 16, 2006)

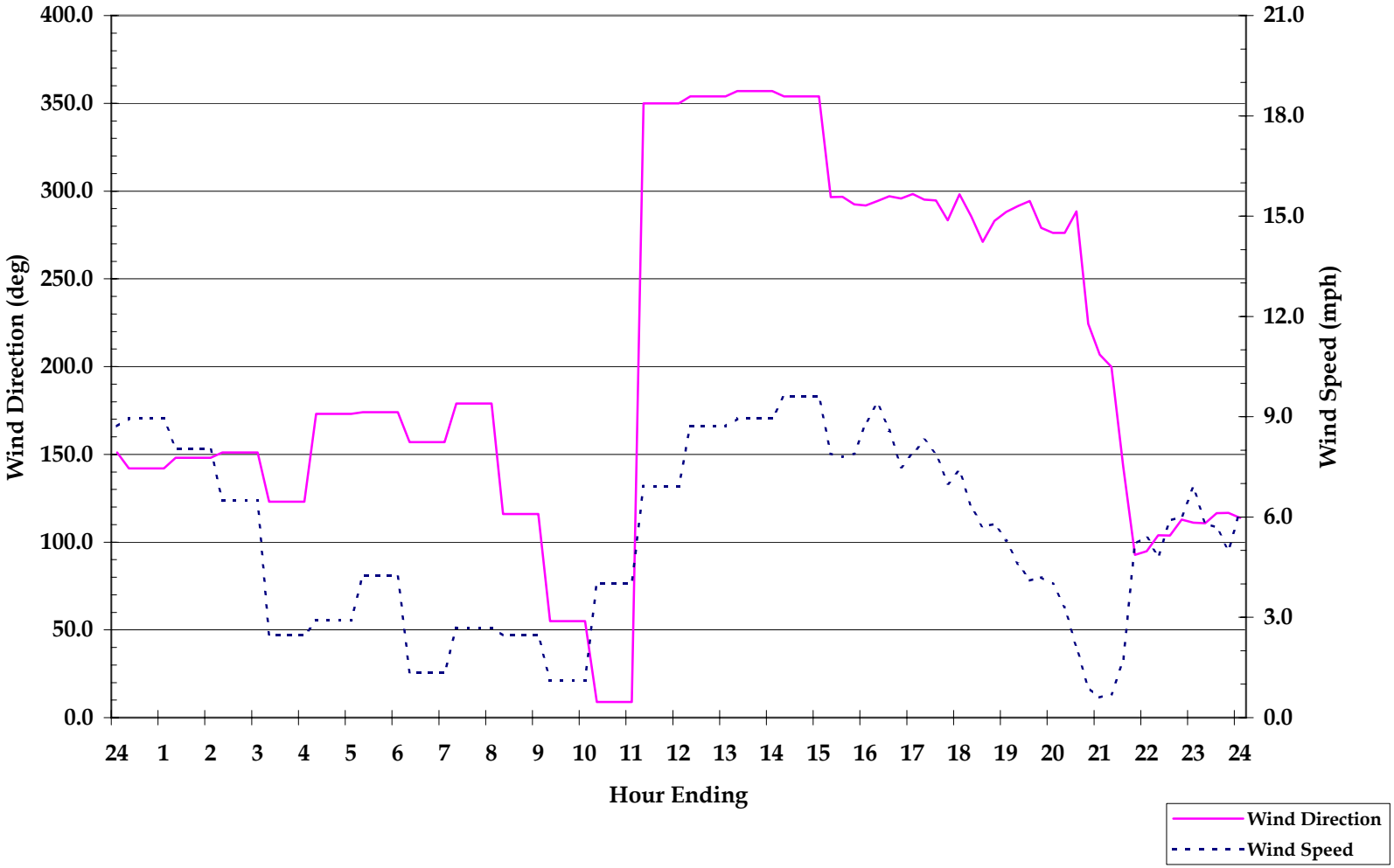


Wind Direction and Speed Traces at the SSFL Site
(July 17, 2006)



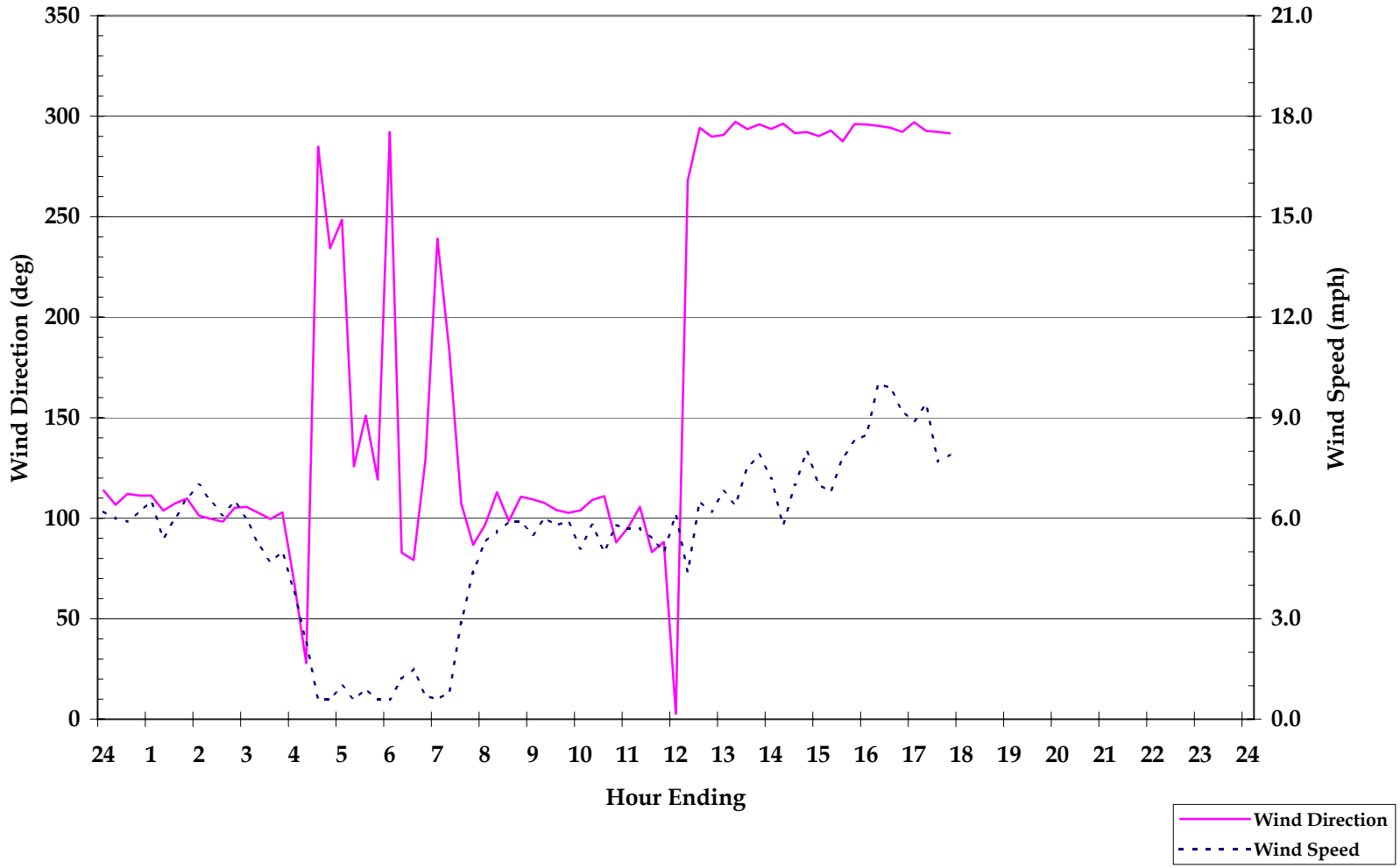
Note: Onsite LOX meteorological data was supplemented with Area 4 meteorological data for hours ending 10 through 24.

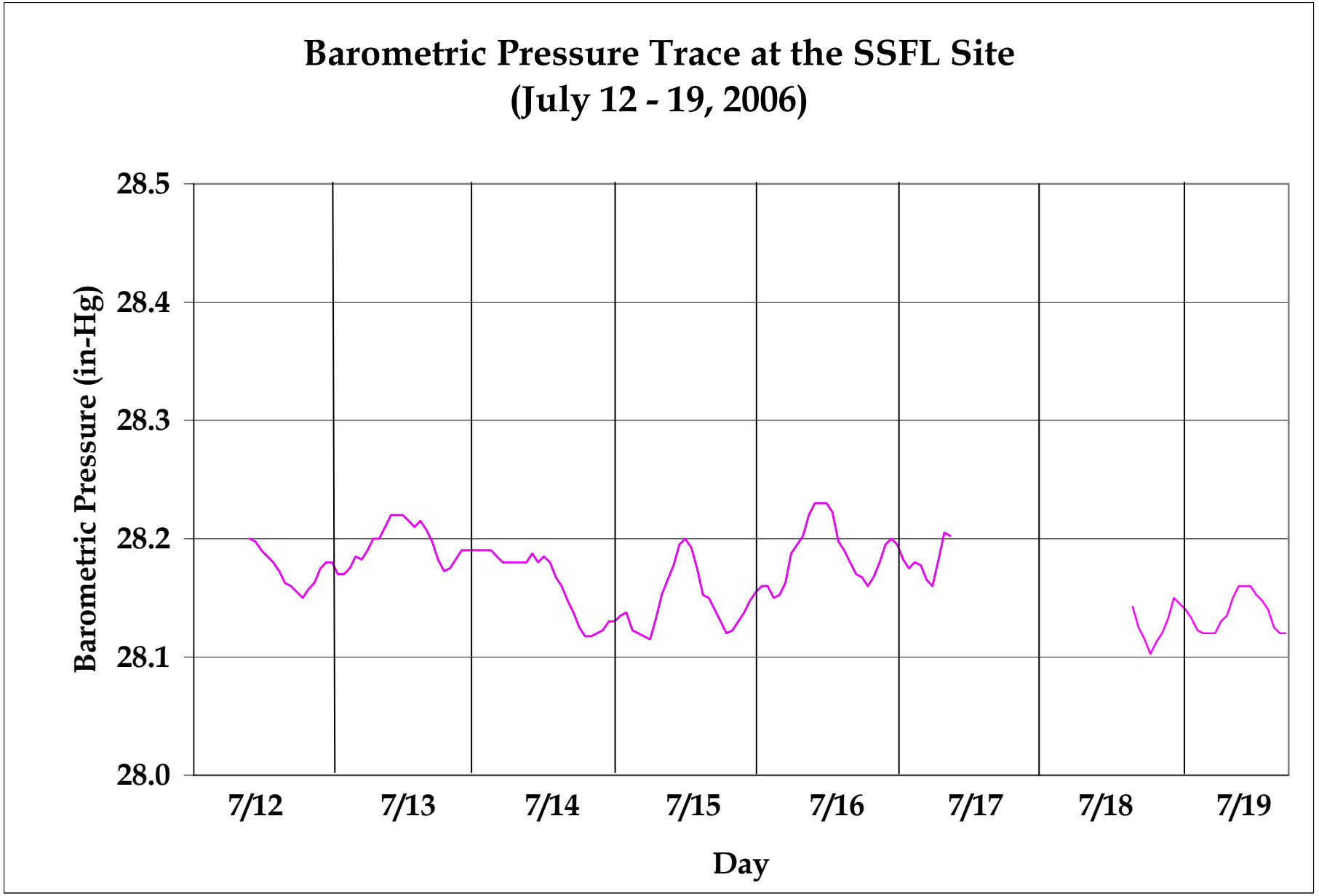
Wind Direction and Speed Traces at the SSFL Site
(July 18, 2006)

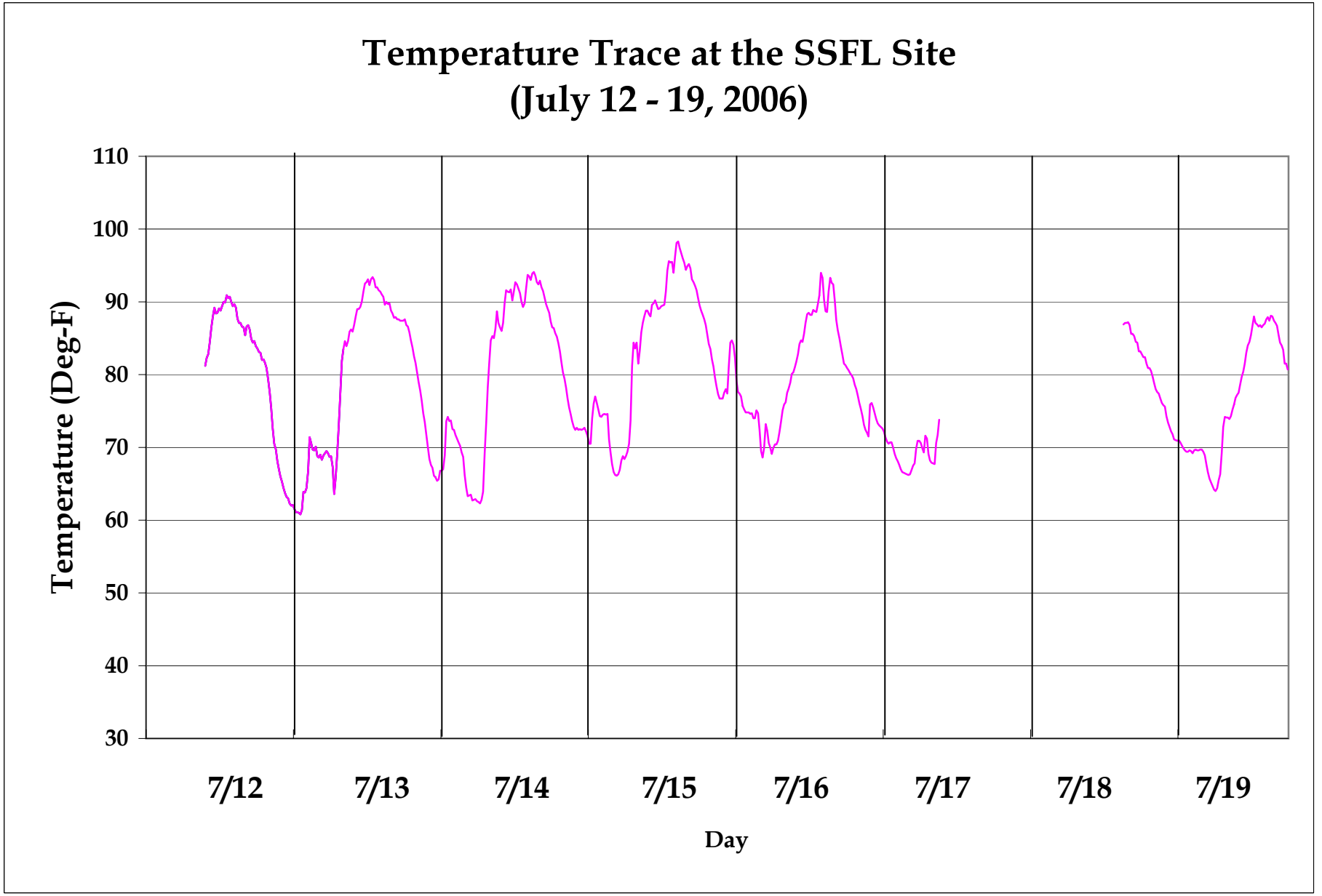


Note: Onsite LOX meteorological data was supplemented with Area 4 meteorological data for hours ending 1 through 15.

Wind Direction and Speed Traces at the SSFL Site
(July 19, 2006)




Barometric Pressure Trace at the SSFL Site
(July 12 - 19, 2006)
Barometric Pressure (in-Hg)
28.5
28.4
28.3
28.2
28.1
28.0
7/12
7/13
7/14
7/15
7/16
7/17
7/18
7/19
Day


Temperature Trace at the SSFL Site
(July 12 - 19, 2006)
Temperature (Deg-F)
110
100
90
80
70
60
50
40
30
7/12
7/13
7/14
7/15
7/16
7/17
7/18
7/19
Day